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THE ROLE OF AGRICULTURE IN THE DEVELOPMENT OF LDCs AND THEIR INTEGRATION INTO THE WORLD ECONOMY

Prepared by the Food and Agriculture Organization of the United Nations

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The Role of Agriculture in the Development of LDCs and their Integration into the World Economy

Paper prepared for the
Third United Nations Conference on the Least Developed Countries
(Brussels, 14-20 May 2001)

Food and Agriculture Organization of the United Nations
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EXECUTIVE SUMMARY

This paper examines the role of the agricultural sector in poverty alleviation and in the sustainable economic growth and development of the least developed countries (LDCs). It sets out to provide up-to-date information and to generate debate that will help forge stronger consensus on actions needed for agriculture to be accorded its rightful place in the LDCs.

Agriculture is the mainstay of the LDC economies, underpinning their food security, export earnings and rural development. Yet, LDC agricultural production for the domestic and export markets has lagged behind, with growth in per caput output declining in the 1990s. Slow production growth and sharp annual fluctuations in output have continued to be chronic problems for the LDCs, constituting the main causes of their persistent poverty and rising food insecurity. The proportion of undernourished in the total LDC population increased from 38 percent to 40 percent between 1969-71 and 1996-98, while the absolute number rose from 116 million to 235 million. As regards trade, the LDCs have continued to be marginalised from world agricultural markets, accounting for only 5 percent of global agricultural exports in the early 1970s but barely 1 percent in the late 1990s.

The poor performance of agriculture in the LDCs is related to the many internal and external difficulties that these countries face as they seek to develop this sector and achieve their objectives of improving food security and increasing export earnings. Their internal difficulties include low productivity, rigid production and trade structures, a limited skills base, short life expectancy and low educational qualifications, poor infrastructure, and inadequate institutional and policy frameworks.

At the same time, with the growing integration of markets from globalisation and trade liberalisation, their economies have to operate in an increasingly competitive external environment. They continue to export a narrow range of primary commodities that are highly vulnerable to instability of demand and deteriorating terms of trade. In addition, external assistance to agriculture in the LDCs has declined, with average annual ODA falling 20 percent from 1981-90 to 1991-99. Their inability to compete not only on world markets but also on their home markets is reflected in their rising food import bills.

Reversing this decline and integrating the LDCs into the world economy represent enormous challenges: overcoming marginalisation from global markets; adapting to technological change; and coping with a new institutional environment. But most of the LDCs have enormous untapped agricultural potential to meet these challenges, with considerable scope for more effective use of resources and higher productivity. What is needed therefore is a renewed focus on agricultural and rural development. Significant progress in promoting economic growth, reducing poverty and enhancing food security cannot be achieved in most of these countries without drawing more fully upon the potential productive capacity of agriculture and its contribution to overall economic development. With the support of their development partners, the governments of the LDCs may need to rethink their agricultural and rural development strategies if they are to achieve their social and economic objectives, including that of reducing the number of undernourished by 2015.

The paper highlights elements of a strategy for action by the LDCs - with the support of the international community - that will help them exploit their agricultural potential by strengthening their supply capabilities and competitiveness, and thus take full advantage of the trading opportunities inherent in the multilateral trading system. Progress is crucial on three fronts: raising and sustaining productivity and competitiveness; diversifying production and trade; and improving access to foreign markets.

Recommendations for key actions to spur agricultural growth in the next decade are put forward for both LDC governments and their development partners, drawing upon past experience and success stories, and taking into account emerging domestic and global challenges. The critical strategy must be to recapitalize agriculture, investing more heavily in this sector and in programmes to develop rural economic and social infrastructure. Public investment needs to be directed in particular towards promoting agricultural research and extension, improving access to financial services, providing investment incentives, and increasing access of the poor to support services and productive resources.

The paper proposes the following priority measures:

1. The LDC governments must commit themselves to a coherent and comprehensive vision of agricultural and rural development. They need to design, implement and constantly review a series of priority and carefully-timed measures necessary to boost investment in agriculture:

- Maintaining sound and stable macroeconomic and trade policies that encourage investment in agriculture;
- Strengthening human capital in rural areas through health and education services and access to productive resources;
- Establishing a strong institutional environment that improves access to markets, ensures dissemination of information, sets standards and provides an adequate legal and regulatory framework;
- Enabling research and extension services to develop productive and robust technologies under farm conditions;
- Upgrading the marketing, transport and communication infrastructure to support farmers' access to seasonal and longer-term capital and inputs, and providing them with strong price incentives;
- Safeguarding natural resource and environment capacity.

2. Such action on the part of the LDC governments can be rendered more effective if their development partners take steps to:

- Increase ODA and other forms of assistance to help the LDCs meet public investment needs in agriculture. Current initiatives to provide financial assistance to LDCs through targeted debt relief and other means could be partly channelled towards supporting efforts to develop the sustainable agricultural potential of LDCs, in particular by strengthening research and development and the extension services, by ensuring the availability of essential inputs and structured commodity finance, and by providing marketing assistance;

- Support LDC efforts to facilitate the transfer of technology and the flow of foreign direct investment that will improve agricultural productivity and competitiveness;
- Facilitate market access of LDC agricultural commodities in developed and developing countries, notably by improving terms of trade, adapting multilateral trade rules to the institutional, human capital and infrastructural context of the LDCs, and assisting in developing product quality and pre- and post-production standards.

INTRODUCTION

Role of agriculture in the economy

1. The agricultural sector is at the heart of the economies of the least developed countries (LDCs). It accounts for a large share of gross domestic product (GDP) (ranging from 30 to 60 percent in about two thirds of them), employs a large proportion of the labour force (from 40 percent to as much as 90 percent in most cases), represents a major source of foreign exchange (from 25 percent to as much as 95 percent in three quarters of the countries), supplies the bulk of basic food and provides subsistence and other income to more than half of the LDCs' population. The strong forward and backward linkages within the rural sector and with other sectors of the economy provide added stimulus for growth and income generation.

2. Thus, significant progress in promoting economic growth, reducing poverty and enhancing food security cannot be achieved in most of these countries without developing more fully the potential human and productive capacity of the agricultural sector and enhancing its contribution to overall economic and social development. A strong and vibrant food and agricultural system thus forms a primary pillar in the strategy of overall economic growth and development. Agriculture in LDCs cannot continue to be treated as a residual sector for policy attention and investments.

The challenges of globalization and trade liberalisation

3. Although globalization offers opportunities for growth and development in all parts of the world, the hopes and promises attached to rapid liberalisation of trade and finance have not so far been fulfilled in many developing countries, and particularly so in LDCs. In fact, the latter are increasingly becoming marginalized, especially in agriculture. The combined share of their agricultural exports declined from about 5 percent of world agricultural exports in the early 1970s to just around 1 percent in 1996-98.

4. LDCs face many difficulties, both internal and external, in their efforts to develop their agriculture and to achieve their objectives of improving food security and increasing export earnings. Internal difficulties include low productivity, inflexible production and trade structures, low skill capacity, low life expectancy and educational attainments, poor infrastructure, and deficient institutional and policy frameworks. At the same time, with the growing integration of markets due to globalization and liberalisation, their economies face a more fiercely competitive external trading environment. They continue to export a limited range of primary commodities that are highly vulnerable to instability in demand and a decline in terms of trade. In addition, their external debt remains large. Their inability to compete on world markets, as well as in their home markets, is also reflected in their rising food import bills.

5. Effective ways need to be found to support LDCs with a view to improving their economic and social conditions, achieving structural transformation, diversification and international competitiveness, overcoming their supply-side constraints and, ultimately, accelerating sustainable growth.

Scope of the paper

6. This paper focuses on the role that the agricultural sector can play in accelerating the economic growth and development of the LDCs and their integration into global trade. The objective is to identify elements of a strategy for action by LDCs - with the support of the international community - to exploit their agricultural potential by strengthening their competitiveness and supply capabilities so as to take full advantage of trading opportunities under the multilateral trading system. To that end, an assessment is made of the main constraints facing their agricultural development, including those associated with globalization and the international trading regime for agriculture. Policy lessons of relevance to LDCs are drawn, based on the experience over the past three decades or so and focusing on success stories in agricultural development and the enhancement of competitiveness. In this connection, the paper assesses the implications of trade liberalisation and puts forward some policy guidelines for integrating LDCs' agriculture into the global economy in a manner that would help these countries to maximise the benefits accruing to them in terms of growth and development. Accordingly, it addresses the following specific questions:

- What are the factors that have facilitated or constrained agricultural development in LDCs, in terms of their resource base (both natural and human resources), domestic policy, human development and institutions and external economic environment?
- What challenges lie ahead in the new era of globalization and trade liberalisation?
- What can be learned from past agricultural development experiences?
- What should be done to improve the competitiveness of agriculture in LDCs and alleviate their supply-side constraints?
- What should be the role of the Government in LDCs and of their development partners and other stakeholders?

I. PRESENT SITUATION OF AGRICULTURE

7. Despite its importance to the economy, agriculture in LDCs has remained largely underdeveloped in production both for the domestic market and for export. Although there was a modest growth of output during 1995-98, it barely exceeded population growth, and for the 1990s as a whole in per caput terms it actually declined. In addition, slow food production growth and sharp annual fluctuations in output remain major and chronic problems for the LDCs, constituting the major causes of their rising poverty and food insecurity. Between 1969-71 and 1996-98, the proportion of undernourished in total population in LDCs increased from 38 percent to 40 per cent, while the absolute number of undernourished increased from 116 million to 235 million. For the rest of the developing countries, by contrast, the proportion of undernourished in total population in 1996-98 was18 percent. In addition, indicators of poverty show that the proportion of people living below the poverty line (defined as $1 per day) has risen in many LDCs.[1] What follows is a brief analysis of the major internal factors underlying the present agricultural situation in LDCs. Areas are highlighted where improvements in policies, institutions and investment could accelerate agricultural growth to levels that would help to reduce rural poverty and enhance food security.

A. Supply Issues

1. Trends in production

8. Over the past decade, agricultural production, including food production, has not kept pace with population growth in LDCs as a whole. Although agricultural output in 1990-99 rose at an annual average rate of 2.5 percent, exceeding the rate of 1.6 percent in the previous decade, in per caput terms there was virtually no increase in output, or even a slight decline. The situation was the same for per caput staple food production (Table 1).

9. However, these aggregate figures conceal a wide diversity of performance among countries. While more than 25 countries experienced negative per caput growth rates during 1990-99, 5 had positive growth as high as 2-5 percent. In only about 15 LDCs was per caput agricultural production in 1990-99 higher than in 1980-90. Elsewhere, mainly in SSA, there was a decline.

10. Many LDCs changed from being net food exporters during the 1960s to net food importers during the 1980s and 1990s.Current projections are for their dependence on imports to increase at least up to 2015.[2]

11. Although there have been sharp annual fluctuations over the past 30 years, the value of production of nearly all agricultural commodities rose during 1990-97, the only exceptions being cassava, cocoa and sisal (Annex Table 1).

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[1] For example, recent World Bank figures for Sub-Saharan Africa (SSA), which contains the majority of LDCs (34), show that the proportion of poor people increased from 38.5 percent in the late 1980s to 39.1 percent in the mid-1990s. (World Bank, *Entering the 21st Century: World Development Report 1999/2000,* (New York: Oxford University Press for the World Bank, 2000), *p. 25).*

[2] See FAO (2000), *Agriculture: Towards 2015/30,* Technical Interim Report.

Table 1. Agricultural and food production in the 1980s and 1990s in LDCs and other developing countries (Annual average percentage increase)

	Agricultural production			
	Total		Per capita	
	1980-90	1990-99	1980-90	1990-99
LDCs	1.6	2.5	-0.8	-0.1
All developing countries	3.6	3.7	1.5	2.0
	Food production			
	Total		Per capita	
LDCs	1.7	2.5	-0.8	-0.1
All developing countries	3.7	3.9	1.5	2.2

Source: Computations based on volume indices (FAOSTAT 2000).

2. Determining factors and constraints

2.1 Physical aspects

12. Most LDCs have considerable unexploited potential in agriculture, thanks to their factor endowment in land, water, climate, the scope for utilizing their human resources and improving on their so far limited use of modern farming methods. There is thus great scope for more effective use of their agricultural resources and for increasing their agricultural productivity.

2.1.1 Land and water resource potential and constraints

13. The most fundamental factor influencing the agricultural production potential of a country is the availability of arable land. Land is the essential prior resource needed for crop, animal and forestry production. Thus, the existence of a potential for expanding the cultivated area is basic to national agricultural planning. Comparing the potentially cultivable area with current use of land and forecasts of future population growth will indicate whether countries have the physical capacity for expanding agricultural production, whether for domestic use or for export.

14. Least developed countries have widely diverse agroecological situations, with varying availability and quality of arable land and varying climatic conditions. Some countries have large areas of arable land and considerable water resources while others have more limited availabilities or are almost devoid of these resources. Prospects for agricultural development necessarily hinge on these considerations.

15. With the objective of classifying countries in terms of potential for agricultural production, a ranking on the basis of the land resource availability and constraints was undertaken, taking into account not only land and water constraints but also climatic

constraints and population growth.[3] Annex Table 2 ranks 35 of the LDCs, for which comprehensive data were available, in terms of per caput potential arable land as well as per caput cultivable land in actual use. Potential arable land refers to areas that could be brought under cultivation because of soil suitability and availability of water (rainfall or irrigation).[4] It is important to note that in most cases potential arable land is rainfed and suffers from constraints such as ecological fragility, low fertility, toxicity, and high incidence of disease. These reduce its productivity and require heavy inputs and management skills to permit its sustainable use. Furthermore, especially considering the lack of financial resources in many LDCs, prohibitively high investments may be required before the land is rendered accessible or disease-free. FAO projections to 2015 indicate that the expansion of arable land as well as harvested land is expected to be below the past rate of increase.

16. The overall rankings indicate countries with the most favourable conditions (low rank numbers) or the most severe problems (high rank numbers) with respect to physical resource potential and constraints, now and in the future. This ranking is broadly indicative of a country's relative land resource potential. Three types of countries can be distinguished: i) those with a relatively large land balance, where extensive agricultural expansion may still be possible (e.g. Democratic Republic of the Congo and Mozambique); ii) those which are close to the limit of exploiting actual arable land (e.g. Bangladesh and Somalia); and iii) those which have exploited almost all their arable land and can probably not expand much more (e.g. Afghanistan and Yemen). Thus grouped, the countries can respectively be considered as having a high, medium and low agricultural potential. Out of the 10 highest-ranked countries 8 fall in the humid zone of central Africa. In this group there would appear to be a productive potential that is not yet exploited.

17. Among the lowest-ranked countries, there are two highly contrasted groups: i) two countries that have over 90 percent of their land as deserts and drylands; and ii) four relatively humid countries with problems of steeplands and land degradation.

18. Another feature of the lower-ranking countries that may be noted is that at least five of them have, in recent years, experienced major civil conflicts, political instability, or war. The high rate of population growth in these countries is likely to increase pressure on land resources, which can lead to the breakdown of traditional property rights to land, and ultimately of law and order. Among the many consequences of such changes is further degradation of land.

2.1.2 Potential for growth in agricultural productivity and its importance

19. In LDCs, the contribution of increases in productivity to agricultural growth has been limited or zero. Horizontal expansion, i.e. bringing more land under cultivation, remains the dominant source of growth. Given the increasing pressure on agricultural resources, however, faster agricultural growth, particularly in countries with limited scope for land expansion, will require continuing increases in agricultural productivity from its present relative low level. Such increases are attainable if major constraints on enhancing productivity, such as lack of

[3] One of the clearest consequences of population increase will be to exert pressure for more land to be brought under cultivation. At the same time, existing agricultural land will be used more intensively.

[4] Potential arable land as referred to here is a rough indicator: it includes lands which are currently under forest and wetlands which are protected and not available for agriculture and makes no allowance for land for human settlement. Thus, land potential as shown in Annex Table 2 is likely to be overestimated, but it should nevertheless be a good indicator of the relative potential of different countries.

favourable incentives, limited rural public investment and poor institutional support, are effectively tackled.

20. Available evidence shows that the potential productivity gains are considerable. In terms of agricultural value added per worker, productivity increased, though only slightly, in 21 out of the 31 LDCs for which data are available between 1979-81 and 1995-97 (Annex Table 3). However, in comparison to other developing countries the agricultural value added per worker in LDCs appears to be relatively low, suggesting that there is much room for improvement.

21. The following is a broad assessment of productivity in each of the major agricultural sub-sectors.

Crops

22. The most widely used indicator of crop productivity is production per unit of land (also referred to as crop yield). In general, crop yields in LDCs are low relative to those in other developing countries (Annex Table 4). Yields of the basic food commodities (cereals, roots and tubers and oil crops) are less than half the average for developing countries, although there is much variation among countries. There thus appears to be potential for substantial gains in productivity.[5]

23. Unlike most other developing countries, growth in agriculture in LDCs owes a great deal to area expansion rather than to advances in yields. For example, area expansion accounted for 77 percent of the growth in cereal production in LDCs during 1981-89 and for 72 percent in 1990-99, and higher yields for only 23 percent and 27 percent, respectively (Annex Table 5). For rice, maize and fibre crops, however, a relatively high and increasing contribution was made by productivity improvements (yields).

Livestock

24. Livestock is an important and growing sub-sector, providing a substantial source of income and nutrition for the rural poor in most LDCs. It remains the principal form of non-human power available to rural farmers, and is used by both men and women for various purposes, including accumulation.

25. LDCs have substantial hidden growth reserves in the livestock sector. A comparison of LDCs' share in world livestock numbers with their share in world output therefrom (Annex Table 6), provides an indication of the relative productivity levels of LDCs. Although 14 percent of the world's cattle and 18 percent of the world's sheep and goats were in LDCs in 1997-99, those countries produced only about 4 percent of the world's beef and 11 percent of the world's sheep and goat meat.

26. Livestock production in LDCs relies much more on traditional operations. It relies largely on growth in the number of animals for increased production. There was virtually no significant improvement in productivity per animal in most LDCs, where their average productivity levels remain much below those of developing countries as a whole (Annex Table 6). The extreme scarcity of capital, shortage of quality feed and widespread prevalence of disease have constrained their livestock sector. To achieve greater improvements in

[5] Although yield comparisons should be in a homogenous agroecological context, such comparisons of averages provide a good idea of the range of possibilities.

productivity there is a need for: i) continued investment in both research and the development of animal and feed grain production and processing and ii) assistance to small, poor livestock producers, so that they can become better integrated with commercial livestock marketing and processing.

Fisheries

27. Many LDCs have great potential in fisheries. Although this potential has not yet been fully exploited, fisheries products are increasingly contributing to food consumption of the population and to foreign exchange earnings. Catch potentials vary widely among countries. Those in north-west Africa, south-west Africa, the south-west Indian Ocean (for tuna) and the Rift Valley lakes, for example, have the greatest potential for production and exports. The countries bordering the Atlantic Ocean benefit from particular oceanic conditions (i.e. upwelling systems) that greatly contribute to the increase of marine water productivity, although these systems are subject to marked fluctuations due to weather. High-price demersal species are considered to have approached the limits of possible exploitation, but low price pelagics are thought to be largely under-exploited. Countries still depend largely on foreign investment or international fishing agreements for the exploitation of their offshore resources.

Forestry and agroforestry

28. Forests and trees indirectly contribute to economic development and food security and sustainable livelihoods in numerous ways, through support to agricultural systems, their role in rural development and in maintaining environmental integrity and the provision of opportunities for income generation and employment.

29. Rural communities, particularly in LDCs, are highly dependent on forest goods. Wood fuel is the main source of energy in most LDCs, representing up to 90-95 percent of domestic energy consumption. Non-wood forest products (NWFP) are of major significance primarily in households and local economies. An estimated 80 percent of the population in the developing world use NWFPs to meet some of their health and nutritional needs. Millions of households depend heavily on these products for subsistence consumption and/or income. Timber and the timber industry are an important source of income and a significant component of the national economy in LDCs with high forest cover, representing in one case 15 percent of GDP and 35 percent of total export revenue.

30. In LDCs, forest goods and environmental services are provided almost exclusively by natural ecosystems, which are threatened by unsustainable exploitation practices and other factors, including inappropriate horizontal expansion of crop production. The challenge will be to define and develop integrated systems that ensure sustainable provision by forests and trees of goods and services which are vital to the livelihoods of the population in LDCs.

31. The foregoing analysis shows that the gap between actual productivity levels (in terms of land, labour or animal head) in LDCs and what is potentially achievable is huge. This gap can be defined at three levels:

- Average productivity is far below what could be achieved by using the best practices and technology suitable for the specific location. There is scope for closing this gap through extension programmes and infrastructure investments;

- Yet further improvements in productivity could be obtained through more applied research programmes. However, this involves a long time span and requires continuity of support. The experience of maize in SSA shows that African countries are slow in acquiring the capacity for developing reliable and cost-effective systems for the delivery of crops from the laboratory to the field;[6]
- The difference between productivity derived from scientific innovation and from research is also high. To close this gap applied adaptive research programmes must be supported by international and national pre-invention science programmes.

32. Improving agricultural productivity is associated with the progressive reduction of each of these gaps – starting with the extension gap, moving on to the research gap and then to the science gap – as the country's capacity expands for adopting and developing improved technologies. At this stage of development in the LDCs reducing the extension and research gaps would be the immediate priorities.

33. In many developing countries (including LDCs), governments have often intervened in markets in inappropriate ways and have invested in state-owned production enterprises that have often been inefficient. Reforms have been undertaken to privatise inefficient state-owned enterprises and to eliminate marketing boards and other inefficient regulatory agencies in many countries in recent decades. However, the historical role of such institutions and the associated provision of these public goods in agriculture has not always been fully appreciated. Public sector investment in rural schools, in the development of input and output markets, in agricultural extension and in applied agricultural research have been vital to agricultural development in every economy in the world. Institutional reform without investment in these public goods does not produce economic growth in the agricultural sector. Growth is not produced by passive "let the markets work" policies that do not include critical public investment programmes.

34. Evidence shows that public spending on agricultural extension and research has a potentially high payoff in LDCs. A recent overview of studies on returns to investments in research and extension confirmed that the internal rate of return in Africa (which contains the largest number of LDCs) is rewarding: the median return was 27 percent for extension and 37 percent for research (Annex Table 7). Therefore, building extension and research capacity is necessary to enable LDCs to achieve high productivity growth, in line with the experience of many developing countries. As the programmes are complemented by institutional investments in markets and infrastructure, their effectiveness increases.

35. Despite their high potential payoff, agricultural research and extension expenditures in almost all LDCs are very low in per caput terms compared with those in other developing countries or the developed countries. A recent study by FAO has shown that, in 1989-90, total expenditures on agricultural research in SSA countries were less than 0.6 percent of agricultural GDP.[7]

2.1.3 Environmental and natural resource sustainability

36. There is a growing concern that the expansion and intensification of agriculture may lead to degradation of the natural resource base (soil, water, vegetation and biodiversity) and

[6] IFPRI, "Is there hope for food plenty in Africa?", *News & Views: A 2020 Vision for Food and the Environment*, October 1996.
[7] FAO, Rome (1995), *The National Agricultural Research Systems of West and Central Africa.*

consequently to a decrease in agricultural production. However, agricultural intensification *per se* – i.e. increasing the productivity of land already under cultivation - should not be a threat. In fact, properly managed intensification is needed to meet agricultural production needs and reduce the pressure of agricultural expansion in fragile and marginal areas. The lack of sound management practices and of access to appropriate technology and inputs for agriculture, rather than intensification, is the most serious cause of environmental degradation.

37. Sustainability of environmental and natural resources in LDCs is related to a number of factors, such as globalization, inequalities in the development process, lack of access to science and technology, limited financial means of production and disrupted traditional institutions and production systems. Moreover, agriculture still functions as an isolated sector in many LDCs. Increased stress on natural resources, encroachment on marginal lands, migration towards cities or more developed countries, urban slums, social disintegration and poverty often result from a lack of services and employment opportunities in rural areas in the LDCs.

38. Population growth and unsustainable management practices create pressures on the eco-system and jeopardize the ecological balance. The last five decades of resource over-exploitation in many LDCs have drained reserves of natural capital in many regions and limited agricultural and livelihood opportunities for future growth. Revitalization of indigenous knowledge and more research are needed on production methods that preserve natural resources and the environment. Most importantly, more attention should be given to local participation in decision-making processes for better interactions of individuals and social groups with the natural ecosystem. There should be financial and other assistance to help LDCs adopt and acquire appropriate technology. Programmes, including a diagnosis, at national, subnational and local level, of areas and populations most exposed to the degradation of land resources, and with consequences for their livelihood, need to be initiated and implemented jointly by various stakeholders. Unfortunately, these areas are often left aside by development programmes, as their rehabilitation is complex and not easy to justify on purely economic grounds. The selection of appropriate inputs should also be based on solutions that combine traditional knowledge and modern techniques and assist the farmers in investing in the maintenance of land assets.

39. The integration of environmental considerations into development planning should be seen as an indispensable element of development strategy in LDCs. It is not only a means of protecting fragile lands for future agricultural production, but also a mechanism for LDCs, in particular those in dryland zones, to sustain an important capital of biological diversity and contribute to solutions to some of the global change issues. Thus, a site-by-site analysis is likely to be required, given that the interaction between policies that promote a supply response and the manner in which that response will be achieved (and hence the environmental impact) is likely to be ambiguous.

40. In sum, it appears that many of the LDCs have relatively abundant agricultural and natural resources that could provide them with a comparative advantage in a range of agricultural products. These could be developed to exploit international market opportunities and therefore generate broad-based growth throughout the economy. There are great opportunities for intensification and productivity enhancement in agriculture. The next three sub-sections examine domestic and external challenges and constraints that have impeded the full exploitation of this potential and highlight policy measures for its realization in an effective and sustainable manner.

2.2 Human development aspects

41. Developing the human resource potential involves examining the roles and needs of farmers (both men and women) and other members of the household who may perform diverse duties and have differing requirements with regard to education, health and nutrition, and technical knowledge. A low level of human development (as measured by a combination of life expectancy rates, education attainment rates and standards of living)[8] is characteristic of LDCs.

2.2.1 Education, training and extension

42. Education is the main pillar of human development and a major factor in agricultural development. Research shows that primary education attainments and literacy, training in basic skills and extension services have an immediate and positive impact on farmers' productivity. A farmer with four years of elementary education is, on average, 8.7 percent more productive than one with no education. Moreover, the better he is educated, the more he stands to gain in income from the use of new technologies and the more rapidly he adjusts to technological changes. The effects are beneficial to the whole population ; more specifically, they enhance the capacity of the rural population.

43. The quality of education and training in LDCs is low, and the institutional capacity to carry out reforms and improvements in education and training for agriculture and rural development is weak. As a result, LDCs have high rates of illiteracy and of children out of school, affecting most acutely the rural population.

2.2.2 Population and health

44. Demographically speaking, the LDCs suffer from a dangerous combination of population, health and development problems that add up to a daunting challenge for their people, their governments and the international community.

45. Current projections indicate that they will continue to experience a high national rate of population growth, although it could be set back by the AIDS epidemic, if unchecked. Obviously, the projected increases in overall population numbers will have major implications for food requirements. For instance, a recent FAO study [9] indicated that in order to maintain, or slightly improve, present per capita food availability by 2050, food supply would need to be nearly quadrupled in some LDCs.

46. There are other demographic factors that are likely to be of direct relevance to agriculture and food security in LDCs. In particular, the increasingly rapid spread of HIV/AIDS in rural areas poses a very serious problem. The pandemic is unique in comparison with other diseases in that it affects the most productive age groups: those between 15 and 50 years. It thus has direct quantitative and qualitative effects on agricultural labour: it greatly reduces the size of the agricultural workforce and its productivity; it changes the division of labour; and it results in a loss of skills that are important for farming, marketing and management of resources.[10]

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[8] See UNDP, *Human Development Report 2000* (New York : Oxford University Press for UNDP), 2000.
[9] Collomb, P. (1999): *Une voie étroite pour la sécurité alimentaire d'ici à 2050.* FAO, Rome, and Economica, Paris.
[10] D. Topouzis and J. du Guerny, *Sustainable agricultural/rural development and vulnerability to the AIDS epidemic*, FAO/UNAIDS joint publication, 1999.

47. The pandemic also directly affects markets for agricultural production by altering the size and composition of the population to be fed, and limiting its effective demand for food. In addition to being a major health problem, in recent years HIV/AIDS has been considered a critical socio-economic issue. Its impact is also related to the fact that it provides an entry point for other diseases, such as tuberculosis and malaria. Increased levels of morbidity and mortality impoverish affected households and deplete the rural sector at large. This is likely to lead to declines in agricultural production and to aggravate food shortages and long-term nutritional deficiencies.

2.2.3 The role of rural women in agricultural development

48. Rural women play an important role in producing the world's staple crops, raising poultry and small animals (sheep, goats, rabbits and guinea pigs), and providing labour for post-harvest activities. Their role is particularly prominent in LDCs. Wars, increasing rural-to-urban migration of men in search of paid employment, together with rising mortality attributed to HIV/AIDS, have led to an increase in the number of female-headed households in the developing world. This 'feminisation of agriculture' has placed a considerable burden on women's capacity to produce, provide, and prepare food in the face of already considerable obstacles.

49. FAO studies demonstrate that while women in most developing countries are the mainstay of agricultural sectors, the farm labour force and food systems (and day-to-day family subsistence), they have been the last to benefit from - or in some cases have been negatively affected by - prevailing economic growth and development processes. Gender bias and blindness persist: farmers are still generally perceived as 'male' by policy-makers, development planners and providers of agricultural services. Women consequently find it more difficult than men to gain access to valuable resources such as land, credit and agricultural inputs, technology, extension services, training and other services that would enhance their productive capacity.

50. Overall, women's contribution to agriculture is poorly understood and their specific needs ignored in development planning. However, women's full potential in agriculture must be realized if the goal of promoting agricultural and rural development is to be achieved.

2.2.4 Information and communications

51. Information and communications are also essential for sustainable agricultural and rural development. Investments in rural information systems can improve farmers' knowledge levels and management skills. Raising the level of awareness, acquiring information, sharing experiences, changing attitudes and developing skills call for processes of communication and learning. While Internet-based technologies are spreading rapidly in many developing countries, there is still a serious lack of basic telecommunications infrastructure. The information gap between the rich and the poor is indeed very wide.

2.3 Policies and institutions

52. This sub-section identifies the major policy and institutional measures that have facilitated or constrained agricultural development in LDCs, with emphasis on those that prevented farmers from increasing their productivity or output.

2.3.1 Macroeconomic policy framework

53. In the past, governments in LDCs used to carry out many of the functions associated with agriculture: funding, a variety of production, marketing and distribution services, regulation and in some cases direct involvement in production. More importantly, the overall effect of government policies was not favourable to the agricultural sector. The prevailing development paradigm emphasized the importance of extraction of agricultural surplus in favour of other sectors. Macroeconomic policies, especially exchange rate policies, discriminated against tradables, while trade policies, by favouring non-agricultural tradables, "tilted" the terms of trade within the tradable sector against agriculture. More importantly, though, the price-based bias against the agricultural sector was not compensated by other forms of transfers in favour of rural areas.

54. Since the early 1980s, most LDCs, like many other developing countries, have been implementing a series reforms both to address macroeconomic disequilibria and to rectify the distorted inter and intra-sectoral price incentives. At the macroeconomic level and in the context of stabilization programmes, a major change has been a move towards an exchange rate system better reflecting the scarcity of foreign exchange and a monetary and fiscal policy conducive to macroeconomic stability. Thus, a major source of anti-agricultural bias has been addressed but not necessarily entirely removed. And steps towards macroeconomic reform have not been uniform in all countries. At the sectoral level, steps have been taken to remove distortionary barriers to the functioning of markets, and towards privatization of processing, marketing and distribution activities.

55. The diversity in the contents and in the implementation of reform "packages" makes it impossible to undertake an overall evaluation of their impacts on agriculture (by e.g. comparing pre-and post-adjustment growth in agriculture or countries which adjusted and those that did not). With respect to macroeconomic policies, it is nevertheless relevant to note that in a number of LDCs which experienced buoyant agricultural growth, macroeconomic policies brought about an increasingly competitive exchange rate and more realistic interest rates.[11] A stable macroeconomy, by promoting investor confidence, constitutes an essential characteristic of an overall growth environment, which in turn induces an expansion of the internal market for agricultural commodities. A competitive exchange rate promotes agricultural exports.

56. As for sectoral policies, the limited cross-country evidence on the impact of sectoral policy reform on agriculture has shown that, while improving the structure of price incentives facing agricultural producers is important, it does not address all the constraints which prevent agriculture from realizing its productive potential. In fact, examination of a number of successful and sustained agricultural growth experiences shows that, in certain periods, output growth has taken place even though the structure of price incentives was not favourable to agriculture.[12] The principal difference between these success stories and others, where price discrimination against agriculture resulted in the stagnation of the sector, is that, despite price distortions, there was nevertheless a government (and donor) commitment to building rural infrastructure and promoting agricultural research and other public services, which more than compensated for the loss caused by distorted price incentives.[13]

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[11] Dorward A. and Morrison J. (2000), "The Agricultural Development Experience of the Past 30 Years: Lessons for LDCs", background paper prepared for FAO.

[12] Mellor J. (2000), "Agricultural Development: So many Successes, Such Excellent Results", background paper prepared for FAO.

57. Thus, the major lesson that emerges from country experiences is that for agricultural growth to occur, a number of factors need to be in place which address the "handicap" of the rural sector in terms of infrastructure, social services, technology, marketing infrastructure, and seasonal credit availability, along with the building of an appropriate institutional environment. There is no unique policy prescription that fits the diversity of the agricultural sector in the LDCs. While enhancing productivity is a common essential requirement, the nature of the increase in productivity envisaged will determine the appropriate policy mix. For example, in countries seeking increased productivity through shifts to commodities with a higher income elasticity of demand (such as fruits and vegetables) and through improved access to dynamic markets (both domestic and external), an appropriate institutional environment, market information and assistance in meeting health and sanitation standards are some of the possible elements of policy.

58. In addition, the multiplicity of linkages of agriculture to the broader rural sector and rural non-farm activities suggests that agricultural policy should not be confined to the narrow limits of the agricultural sector strictly defined, but should consider also the impact of policy on the rural space for which agriculture (especially in LDCs) is the central activity (see section C below).

59. In several countries reforms have not been properly sequenced so as to ensure their efficiency. In designing policies and programmes governments have often concentrated on exchange rates, domestic price liberalisation and privatization of public enterprises, while downplaying other policies and factors affecting agriculture, such as an accompanying adequate improvement in infrastructure, technology and marketing facilities. Inadequate design and sequencing of reforms, and an unstable policy environment, have thus been major sources of the difficulties faced by the reform programmes in many LDCs.

2.3.2 Agricultural and rural development institutions, infrastructure and support services

(i) Markets

60. Rural infrastructure in most LDCs is rudimentary, with semi-subsistence farming often dominating agricultural activities. Lack of or difficult access to markets is common to most LDCs. Even where rural markets exist they are notoriously imperfect, and when they are totally absent it is difficult for farmers to sell their produce and thus ensure food security for their families. An initial requirement is frequently thus the development of these rural markets. Difficulties that have been cited in the operation of commodity markets include remoteness of producers from markets, poor quality of the produce, high transport costs (because of high energy prices and weak infrastructure), lack of competition among traders and poor organization of producers, lack of information on market conditions, lack of clear market rules and their poor enforcement, as well as sharp price fluctuations during the year.

(ii) Rural financial services

61. Financial services in rural areas are often poorly developed. The channelling of cheap credit through state agricultural development banks was characterized by low repayment rates, poor targeting and low operational and managerial efficiency and thus was limited in terms of outreach and sustainability. Often subsidised credit has been misused and channelled towards the introduction of technological packages that were not adapted to local farming systems and for which no effective demand existed. Poor assessment of marketing

possibilities and profitability and the limited loan repayment capacities of the borrowers often explain the high rate of loan defaults, reinforced by periodic debt waivers advocated through political pressure.

62. In contrast, private commercial banks charge high interest rates, especially to small farmers in regions with low population densities. The consequently high costs of borrowing are further increased by an unstable macroeconomic environment involving, *inter alia*, high annual inflation rates. In addition, poor rural infrastructure and communication systems, ineffective extension services, and inappropriate macroeconomic and sectoral policies raise the costs of inputs and marketing, further reducing the profitability of farming. Linkages between farmer and trader and other arrangements with enterprises in the agribusiness chain, such as contract farming, can overcome many of these constraints.

63. Experiences with microfinance institutions highlight the crucial importance of client orientation in the provision of financial services and the use of market- based interest rates that cover the full costs of lending. Poor people seem to prefer a reliable and timely availability of loan finance, even at higher costs, to an untimely and bureaucratic supply of subsidised credit that is tied to specific uses.

64. However, the specific nature of agriculture, such as seasonal credit demand for annual crops and high risks, reduces the role of current microfinance institutions and their lending methods in financing the seasonal and on-farm investment needs of small farmers.

(iii) Availability of farm inputs

65. Information gathered through FAO's Special Programme for Food Security (SPFS) projects in 22 of the low-income food-deficit countries (LIFDCs) shows that a major problem facing farmers is the unavailability of fertilisers and agro-chemicals, and often of animal feed, on time or in the quantity required. This constraint is largely linked to the lack of credit, difficulties in obtaining foreign exchange, the seasonality of agricultural input requirements, spatial dispersion of farmers, poor transport infrastructure and, sometimes, to the marketing and management inefficiencies of the state-owned companies responsible for single-channel input supply and marketing.

66. Quality seeds are also said to be available in insufficient quantities, particularly in Africa and Asia. The informal seed supply system is the dominant source of seed/planting materials for resource-poor farmers in marginal areas and has proven to cope better with a disaster situation compared to the formal seed sector. Nevertheless, the informal seed supply sector has unfortunately received very little attention and financial support from policy makers, to the detriment of the productivity of small-scale farmers. Therefore, without strengthening seed supply systems in developing countries there will be little or no technology transfer to improve crop productivity and hence the livelihoods and well being of poor and vulnerable households in rural communities. In some countries, there are worries that the genetic base of certain cereals has become too narrow, especially as local varieties have been given less importance or suppressed. Absence of improved animal breeds and insufficient livestock treatment facilities are also reported in some cases.

67. Another institutional constraint is inefficient use and distribution of water, which is usually blamed on poor management of irrigation schemes and inadequate water distribution arrangements, which result in an uneven and untimely distribution of water among farmers. In many LDCs, the management of irrigation schemes and water distribution is under public

control. Farmers' associations are rarely involved or are too weak to contribute to both the design of water distribution systems and the maintenance of the network. The water needs of farmers have to be examined from both the household and production-for-export aspects, since the particular use affects the quality of life of both men and women and their communities.

(iv) Agricultural research and extension

68. In most LDCs, the institutional capacity for research and extension is weak. As a result, the technology available is insufficiently adapted to local conditions and research results do not come up with a variety of technological solutions adapted to the range of socio-economic and agro-ecological conditions existing in the country, such as the differing technical needs of female and male farmers. Lack of technological alternatives is often mentioned as a constraint to irrigation development (e.g. different models of irrigation pumps, suited to the needs of different users). Where techniques and technologies developed by research are available, their dissemination is faced with a number of difficulties such as the poor delivery of the extension and training services that are not necessarily targeted to the appropriate users.

69. Weak extension and training services and the consequent lack of technological knowledge of farmers are often considered to be the major factors behind the insufficient adoption of improved technologies. This constraint could be overcome by improving farmers' access to knowledge. For example, valuable information can be obtained from some of the extension materials on FAO's Ecoport web pages.

(v) Social and cultural factors

70. The development and adoption of high-production technology has also been constrained by a number of social and cultural factors, including:

- Insecurity of **land tenure** and **fragmentation of land holdings** in some LDCs, particularly in Africa, especially with regard to women, who may have little or no access to land, depending on custom or formal laws that regulate the tenure practices;
- The low level of **education**, which is an obstacle to raising the technological capacity of farmers from its currently low levels and to the adoption of new technologies. Education for both boys, girls and adult women is often lacking. This constraint is considered to be particularly acute for women. For example, the lack of farmers' bookkeeping skills makes it more difficult for them to appreciate the advantages of improved technologies;
- The **risk-averse tendencies** of farmers, which have been generally underestimated, particularly when they have not been involved in the decision-making process on the development and use of new products. Farmers have sometimes hampered the adoption of new technologies and management practices, especially when their traditional livelihoods and associated local traditions have been threatened. For example, high variability of yield of certain improved varieties has been a constraint to their adoption by poor farmers bordering on the subsistence level. It is essential that both male and female farmers be involved in the entire process of developing new high-yield varieties and associated technologies, in order to ensure a greater acceptance and adoption by those who stand to benefit most;

- Since educational attainment has a direct impact on the knowledge, skills, attitudes and behaviour of farmers, low educational attainment in LDCs is reflected in the great difficulty in changing farmers' **attitude and behaviour** to cope with the new policy reforms. The reforms implemented since the early 1980s have involved drastic changes in the environment in which producers operate. While they were relatively passive actors before policy reform, they have now to take initiatives and organize themselves.

2.3.3 Post-production activities

71. Lack of good quality **roads** as well as insufficient **storage facilities** have been identified as major constraints in many LDCs, sometimes resulting in crops remaining unsold. Failure of the transport infrastructure in some LDCs to move food grains from surplus to deficit areas during periods of localised drought illustrates the severity of transport bottlenecks and agricultural market segmentation. Inadequate communication facilities tend to limit, for many producers, the possibilities of access to markets and market information, as well as to make access to inputs more difficult and costly, and lowers producers' returns. The absence of storage facilities amplifies seasonal market fluctuations and the level of post-harvest losses, that in some cases can be as high as 30 percent of total production.

2.3.4 Food safety and quality standards

72. Ensuring the safety and quality of foods in developing countries is of paramount importance not only from the point of view of public health but also to improve the competitiveness of their food products in the international market. Their control systems and institutions suffer from a number of weaknesses which make them ineffective in ensuring consumer protection and benefiting from the post-Uruguay Round trading regime. These weaknesses concern all the basic elements of a national food control system, i.e. food legislation, food inspection, quality assurance at the production level and testing capabilities (human and physical) to control the quality and safety of the food supply.

73. The following actions are needed to enhance the capacity of developing countries to meet the requirements set out in the relevant WTO Agreements, thus ensuring consumer protection and promoting food trade, internally and externally:

- Capacity building to implement the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBTs) and to fulfil other new international and domestic requirements on standards;
- Developing national capacities for risk assessment; designing domestic regulations and policies for export, food and agribusiness development;
- Promoting regional cooperation and enhancing coherence in trade policies and domestic regulations on standards;
- Development of national food safety regulations and standards without distorting international trade;
- Enhancing the participation of developing countries in international standard setting bodies;
- Collection of relevant information for national capacity building and policy making;

- Improving the negotiating stance in international trade negotiations

2.3.5 Investment in agriculture

74. Least developed countries face a major domestic resource gap in generating the investments needed to achieve their developmental objectives in agriculture, including the target of reducing the number of under-nourished people by 2015. The concept of investment to augment the productive capacity of agriculture entails not only physical assets, but also science and technology dissemination, human capital enhancement and social capital build-up. Creating a pro-investment climate to raise productivity levels and achieve the necessary structural changes is a major policy challenge.

75. In many LDCs, much public expenditure on agriculture is in the form of subsidies, leaving little public funding for the creation of new assets, for maintenance or for other growth-producing expenditure. The result is that many agricultural support services barely function, rural roads are impassable for much of the year, farm machinery is mostly inoperable and irrigation schemes are crippled.

76. It was seen above (paragraphs 53-59) that many LDCs have adopted policies to deregulate agricultural markets, reduce price distortions, and allow a greater role for private agents in economic activity. Such measures, although necessary, are not always sufficient for inducing the investment necessary to permit sustained production increases. Improved investment incentives also require policies that improve access to markets, ensure dissemination of information, set standards and provide an adequate legal and regulatory framework. At a more general level, there is consensus that political stability and a well-defined and enforced institutional framework are also needed. Strong complementarily between public and private investment is also necessary to sustain agricultural growth, with governments investing in sectors having an important public good element such as research, extension and infrastructure and hence covering in particular roads, education, norms and standards.

77. FAO projections put the average annual gross investment requirements until 2010 in SSA for primary agriculture, storage and processing (excluding the related pre- and post-production infrastructures and services) at some US$ 11.1 billion, under the "business-as-usual" scenario[13]. To reach the World Food Summit target of halving under-nutrition, however, additional investments of about US$ 3.6 billion would be required to ensure the necessary increase in domestic food production.

78. Rural infrastructure (e.g. irrigation and roads) is badly lacking in LDCs, particularly in SSA. Heavy investments are needed in rural communication infrastructure, irrigation improvements and modernization, better exploitation of rainfall by simple and improved water capture and use, land management and improvements, education extension and research and the provision of health services. Research results and best practices, as yet untried on a large scale, can be adopted for high-potential areas in SSA. Research continues to be needed to develop farming systems for small, resource-poor farmers, who form the majority in most

[13] FAO Committee on World Food Security, *Investment in agriculture for food security: Situation and resource requirements to reach the World Food Summit Objectives*, CFS: 99/Inf.7, June 1999.

LDCs. These new farming systems need to be sustainable at higher population densities and capable of intensifying production on existing land.

79. While the need for investment is huge, sequential removal of constraints is crucial. National experience has shown that when the increase in production associated with a reform or a change in circumstances has reached a plateau, a further reform, or series of reforms, has been required to unleash further potential. Sustained growth has only been possible when new constraints have been alleviated by further reforms.

80. Most of the required investments can be expected to be forthcoming from the private sector, and therefore depend decisively on the prevalence of a conducive climate at the national and international levels. In this regard, public investment is an indispensable pre-condition and catalyst for and complement to private investment, involving basically investment in research and infrastructure.

B. Demand Issues

1. Trends in consumption

81. Domestic consumption (human consumption and other uses) of agricultural products in LDCs varies widely between food and non-food products. Non-food products such as raw materials and tropical beverages are basically produced for export. The little that goes to the domestic market is destined essentially for local processing industries, which in turn export the bulk of their produce. In contrast, the domestic consumption of food products is a large and growing proportion of output. Consumption of basic foodstuffs in LDCs grew by an annual 2.3 percent during 1990-97 (Annex Table 1), below the population growth rate of 2.6 percent. The consumption of cereals met by domestic production declined from 96 percent in 1970-80 to 85 percent in 1990-98.

82. For many commodities, production has not, and perhaps will not, keep up with demand. For example, during the 1960s LDCs were net exporters of rice (2.4 million tonnes), but by the mid-1990s they were importing 3.5 million tonnes, a figure that is projected to rise to over 7.5 million tonnes by 2015. Similarly, net imports of wheat increased from 1.1 million tonnes in 1961-63 to 6.1 million tonnes in 1995-97 and are projected to reach 15 million tonnes by 2015. Cassava and plantains, the main staple food in many African LDCs, also showed an increase in net imports in the 1990s.

83. In sum, trends in production, consumption and trade amply demonstrate the increasing import dependence of LDCs for food. FAO projections for 2015 suggest that this dependence will continue to increase. If the requisite commercial imports cannot be ensured, or if food aid cannot make up for the shortfall, per caput food consumption will inevitably fall.

2. Determining factors and constraints

84. There are three determinants of demand growth: population, per capita income, and the income elasticity of demand. For LDCs as a whole, the real GNP per caput has been stable over the last two decades. Between 1989-91 and 1995-97, in only 20 out of the 40 LDCs for

which comparable data are available did it rise. This suggests that the increase in cereal consumption in most LDCs during 1990-98 was due mainly to population growth. Population growth rates in LDCs are among the highest in the world. For LDCs as a whole, the rate increased from an annual 2.5 percent in 1980-90 to 2.6 percent in 1990-96 and is projected to remain high (2.3 percent) during 2000-2015. Their food security is thus threatened unless production performance and/or food import capacity can be improved significantly over the levels of the past 10 years.

85. The capacity to import food is determined by the availability of foreign exchange, which in turn is determined by export earnings (essentially from commodities for most LDCs) and by the external resource flow. Many LDCs suffered because of the fall in prices of their primary commodity exports during 1990-98. The foreign debt burden also limits the ability of many LDCs to import, and the situation has been compounded by the slowing down of the external resource flow.

3. Food security

86. The interaction between food supply and demand factors determines the level of food adequacy. The most widely available and used indicator for estimating food adequacy levels is per caput dietary energy supply (DES), which measures the food available to each person on average in a country. As shown in Tables 2 and Annex Table 8, the DES for LDCs as a group has been very low and barely risen since 1979. For roughly half of the 44 LDCs for which data are available it has been below 2100 kcal/day. This stands in contrast to the progress in other developing countries and the world as a whole, where food production has continued to outstrip population growth.

Table 2. Per caput dietary energy supply (DES)

	Per caput DES (kcal/day)			Average annual rate of increase (percent)	
	1979-81	**1989-91**	**1996-98**	**1979-81 to 89-91**	**1989-91 to 96-98**
World	2 540	2 700	2 780	0.6	0.4
Developing countries	2 300	2 510	2 650	0.9	0.8
LDCs *	2 040	2 080	2 070	0.2	-0.1
of which in :					
Africa	2 060	2 010	2 000	-0.2	-0.1
Asia	2 020	2 180	2 180	0.8	0.0
Pacific	2 380	2 340	2 410	-0.2	0.4
Caribbean	2 040	1 770	1 840	-1.4	0.5

* Excluding Bhutan, Equatorial Guinea, Samoa and Tuvalu, for which data were not available.
Source: FAO.

87. FAO estimates show that the incidence of chronic undernutrition (undernourishment)[14] is high in LDCs (Annex Table 9). Between 1969-71 and 1996-98, the proportion of undernourished in total population in LDCs increased from 38 percent to 40 per cent, while

[14] The term "undernourished" in the context of the World Food Summit 1996 refers to persons whose food consumption level is inadequate in terms of calories consumed relative to requirements on a continuing basis.

the absolute number of undernourished is estimated to have increased from 116 million to 235 million.

C. Interlinkages: Agricultural Growth, Rural Development and Poverty Alleviation

1. Nature of the linkages

88. With 70 percent of the world's extremely poor and food-insecure people living in rural areas, the role of agricultural and rural development in the eradication of poverty and food insecurity is crucial. As agriculture is the predominant economic activity in rural areas, the rural poor strongly depend on it for their income and food entitlements. The dependence is most marked in countries where food insecurity is most widespread, and where there often exists a combination of low incomes, a food deficit and high external indebtedness. Most such countries are LDCs.

89. National experience of economic growth and poverty alleviation reveals that: i) poverty alleviation is positively related to overall economic development; ii) agricultural growth in developing countries has stronger effects on poverty alleviation than growth in other sectors; iii) it alleviates poverty mainly through the labour market, especially through increases in wages; iv) its impact on poverty reduction lessens if there is growing income inequality; and v) rural growth reduces both urban and rural poverty.

90. The potential for agricultural growth to alleviate rural poverty in the LDCs is exemplified by the fact that, on average, agriculture employs about 75 percent of the total labour force (over 80 percent in several cases) and that the percentage of poor in the rural areas is generally much higher than in the urban areas (see Annex Table 10). Hence, agricultural growth can increase the income of the poor both directly, through the additional demand for labour, and indirectly, through input, output and expenditure linkages with non-farm productive activities in the rural sector.

91. The rural non-farm sector constitutes the connecting link between agriculture, rural development and rural poverty alleviation. In many low-income countries, it is expected to be closely linked to agriculture in numerous upstream and downstream productive activities. Earnings from participation in such activities may constitute a substantial share of the overall income of rural populations. Annex Table 11 shows data on non-farm income and its distribution (when available) by (a) income percentiles (b) zones, according to the type of agricultural production; and (c) types of product cultivated. It covers a limited number of LDCs in Africa and Asia for which data are available.

92. Thus, farm and non-farm rural activities should be considered complementary in terms of financing investment in both sectors: savings derived from farm activities can constitute start-up capital for rural non-farm activities. At the same time, savings derived from non-farm activities can be used to acquire inputs and adopt improved agricultural technologies.

2. Does the type of agricultural growth matter?

93. The shares of non-farm income reported in the foregoing paragraphs demonstrate, if anything, that the terms rural and agricultural growth are not synonymous and that non-farm

income is an important component in the livelihoods of rural households. Thus, when considering the impact of agricultural growth on poverty and rural development, its effects through production, income and expenditure linkages on rural non-farm income and employment should also be taken into account. Approaching the question of agricultural growth and poverty reduction within the more general rural development framework described above makes the analysis more complex.

94. One example is that of productivity-driven agricultural growth achieved through capital-intensive technologies. Such a pattern of productivity growth may not result in poverty alleviation for two reasons: (a) poor farmers lack the necessary access to capital that would enable them to benefit from the new technologies; and (b) agricultural growth is not translated into increased demand for labour and thus landless rural labourers do not benefit. Consequently, the agricultural growth does not directly benefit the poor. On the other hand, a more complete examination of the effects of agricultural growth should take into account the effects on rural incomes and poverty via the rural non-farm sector. Specifically, is increased agricultural output associated with increased demand for services provided at the local level (input provision or services or output processing and distribution)? Is additional income resulting from increased growth spent on locally produced goods?

95. In cases of extreme inequality in the distribution of productive assets and a capital-intensive technological change it can be expected that there will be no indirect effects (through various linkages of agriculture to the non-farm sector) and most probably the poor will not benefit. Agricultural inputs are likely to be "imported" (from urban areas or abroad) while the consumption patterns of those who benefit from agricultural expansion are likely to involve a large proportion of high-value commodities and luxuries that are not produced locally. Input, output and expenditure linkage effects can thus be expected to "leak out" of the rural areas.

96. On the other hand, the benefits of agricultural growth based on improvements in labour productivity are likely to be widely diffused in the rural areas. Such technologies (and the gains from them) may be accessible to poorer farmers, while landless labourers benefit from higher wages or employment. Input, output and expenditure linkages should favour the rural sector, since landless labourers and smallholders are likely to acquire inputs or services and spend additional income in the rural areas, thus increasing secondary income effects through the expansion of rural non-farm activity and demand for labour.

97. Another distinction concerning the types of agricultural growth concerns that of "food versus staples". The stylised fact that most of the rural poor derive income from the production of staples in the form of either food or other entitlements (i.e. income derived from employment in the production of staples or from activities linked to it) has prompted the "promotion" of staples production (in terms of research on ways of increasing staples yields) in preference to the production of cash or commercial crops. In the context discussed above, such an argument would imply that staples production has stronger linkages to the local economy and thus a stronger effect on reducing poverty and enhancing food security than non-staples. Such indeed may be the case for rural areas with limited access to food or other markets (such as urban and export markets). In such situations, linkages created by

productivity-induced increases in food production are very strong, as there are no "leakage" effects.

98. Nevertheless, no general statement can be made in favour of or against staple commodities. There is no evidence that shifts to cash (or commercial) crops have been associated with increases in poverty. Cash crops have much to offer in the way of both higher income and greater income diversification opportunities. In the presence of higher risks associated with reliance on the market for both food and income, farm households can be expected to diversify their resources between them. Critical requirements for successful diversification opportunities are that channels for the supply of inputs and marketing of outputs are opened up and that there should exist well-functioning rural financial markets.

99. In sum, the role of agricultural development in overall economic development and in eradicating poverty and food insecurity in LDCs is crucial. Measures to that end include: raising agricultural productivity and encouraging other sources of rural development, notably through rural infrastructure; enhancing human capabilities in rural areas through health, education and sanitation services and access to productive resources, with stress on gender equality; and preserving the capacity of the natural environment to sustain the present population and future generations.

II. EXTERNAL ECONOMIC ENVIRONMENT: OPPORTUNITIES AND CHALLENGES

100. Given the rapid pace of globalization, the external economic environment presents major challenges as well as opportunities for agriculture in LDCs. While access to larger and more affluent markets favours growth and development through trade, the LDCs face many internal supply-side constraints, associated with their economic underdevelopment, which render their exports uncompetitive. This section reviews the major trends and patterns of their agricultural trade and examines the main factors affecting them.

A. Participation of the Least Developed Countries in World Trade in Agriculture

1. Salient trends

1.1 The marginalization of LDCs in world agricultural markets

101. The participation of LDCs in international agricultural trade is insignificant and has been declining. Their share in world agricultural exports has dropped steadily, from 3.3 percent in 1970-79 to 1.9 percent in 1980-89 and a mere 1.5 percent in 1990-98 (Table 3). Their share in world imports has also declined, though much less so, from 1.8 percent in 1970 to 1.6 percent in 1998. While world agricultural trade (including the intra-trade of EU) expanded at an average annual rate of over 5 percent during 1990-98, exports from LDCs grew by only 3.9 percent, in contrast to 6.6 percent for the developing countries as a whole. Their market share of many key agricultural commodities has fallen significantly from the 1980s to the 1990s, by over 30 percent for such commodities as timber, coffee, tea and cocoa and about 20 percent for cattle.

Table 3. Trend in agricultural exports of LDCs and other developing countries

	LDCs	All developing countries
Average annual rate of export growth (percent)		
1970-79	9.5	16.0
1980-89	-1.4	2.4
1990-98	3.9	6.6
Share of world agricultural exports (percent) [1]		
1970-79	3.3	33.8
1980-89	1.9	31.0
1990-98	1.6	30.0

[1] World exports include intra-EU trade.
Source: FAOSTAT (2000).

1.2 Commodity and geographical concentration of exports

102. In addition to their small and declining share in world agricultural trade, LDCs' agricultural exports consist largely of a few low value-added primary commodities. On average, the top three export items, which are predominantly primary agricultural commodities, account for over 65 percent of total export earnings. The major agricultural exports of LDCs include coffee, cotton, jute, fish and seafood, tropical wood and bananas, mostly in unprocessed form. Moreover, the exports are concentrated on only a few markets, of which EU is by far the largest (36 percent), followed by the United States and Canada (21 percent) and Japan (6 percent). Therefore, conditions of market access to these countries are of critical importance in defining their trading opportunities.

1.3 Dependence on food imports

103. The LDCs are increasingly dependent on imports to meet their consumption requirements for their basic food commodities. For example, their ratio of cereal imports (including food aid) to total cereal food supply has increased from 5 percent in the 1960s to about 15 percent in the 1990s. For 25 out of the 42 LDCs for which comparable data are available for 1990-98 the ratio exceeded 30 percent.

104. In addition, for LDCs as a whole food imports accounted for 15 percent of total merchandise imports during 1996-98 (Annex Table 12). Cereals dominate the food import bill, accounting for about 52 percent. The volume of cereal food aid fell from about 5.4 million tonnes in 1989-91 to 3.6 million tonnes in 1997-99.

105. FAO projections for 2010 suggest that the food gap will continue to widen and will have to be filled by imports, including food aid. Whether the LDCs will be able to finance these growing imports depends on a number of factors, the most important in many cases being their export earnings and external resource inflows. In most of these countries export earnings have stagnated over the last two decades, mainly because of the fall in commodity prices. From 1980-82 to 1995-97, per caput merchandise export earnings for LDCs as a whole increased by only US$2 per year (from US$35 to US$37), whereas for other developing countries they doubled over the same period, to reach US$394 per annum. The foreign debt

burden has also limited the ability of many LDCs to import. In 1995, the simple average of the debt-service ratio was 23 percent for 41 LDCs for which data are available.

2. Determining factors and constraints

106. The marginalization of LDCs in world agricultural trade is reflected in the slow growth of their agriculture sector as well as of their overall economy, slower even than that of other developing countries. As shown in Section I, one reason for this is the inherent structural and technological constraints facing these countries as well as the pursuit of inappropriate policies, along with various domestic socio-political factors. Slow growth and the low level of participation in world markets also reflect the external economic environment they face.

2.1 Commodity markets and terms of trade

107. The primary agricultural commodities on which many LDCs depend heavily (tropical beverages and agricultural raw materials) have experienced sluggish world demand and a downward trend in real prices. Two factors were identified as causing a long-term decline in commodity prices: i) low income elasticity of demand, mainly for food; and ii) declining intensity of raw materials use in manufacturing. In addition, LDCs exporting largely raw materials are particularly prone to changes in commodity markets. For example, Benin, Chad and Mali lost 25 percent of their total export earnings from 1990 to 1992 following a drop in the world price of cotton by 34 percent.[15]

108. Recent studies show that the downstream marketing, transport and distribution of some agricultural commodities are dominated by few multinational enterprises (MNEs), a handful of which account for 85 percent or more of world trade in wheat, coffee, cocoa, grains, jute, tobacco and tea.[16] Given the high costs associated with these downstream activities, the growers' price represents very low shares of the final product, ranging from 4-8 percent for raw cotton and tobacco to 11-24 percent for jute and coffee.

2.2 External assistance to agriculture

109. In almost all LDCs official development assistance (ODA) is the main catalyst of investment in agriculture. However, such external assistance to the sector has been on the decline since the early 1990s, the average annual amount having fallen by 20 percent from 1981-1990 to 1991-99 (Annex Table 13). Although total ODA to LDCs rose over the same period the share received by the agricultural sector declined from 20 percent to 13 percent. During the 1995 to 1999 period, there was slight increase in multilateral commitments, particularly from IFAD and regional development Banks, with some decline in bilateral commitments (Annex Table 14).

110. Reversing this downward trend is crucial to ensuring that appropriate agricultural intensification strategies can be pursued in the future. In particular, adequate external assistance is essential to enhance agricultural productivity, which is dependent on the

[15] OECD, "Market access for the LDCs: Where are the obstacles?" OECD/GD (97) 174, Paris, 1997.

availability of sustainable alternative technologies and farming practices that will not further degrade the natural resource base.

111. Given the importance of the agricultural sector in LDCs for poverty reduction and economic growth, current initiatives to provide financial assistance through targeted debt relief and other measures could in part be directed to supporting efforts to develop their sustainable agricultural potential.

2.3 Trade preferences

112. All LDCs are beneficiaries under the Generalised System of Preferences (GSP). In addition, the majority receive special treatment under other schemes - e.g. from the European Community in the context of the Lomé Convention and its successor ' Cotonou ' Agreement described below. The Caribbean Basin Initiative (CBI) of the United States is a similar preferential arrangement, but involves only one LDC.

113. To the extent that the UR Agreements lowered tariffs, the preferential margin enjoyed by LDCs is eroded. Assessments vary as to the extent of erosion and its impact on trade flows and welfare, but the net impact is generally estimated to be very small. In any event, available statistics suggest that, with the exception of a few countries, the preference schemes have not contributed significantly to generating export growth of the beneficiaries or improving their trade shares. While this has been partly because of the various restrictions in the schemes (e.g. in respect of product coverage, quotas, and rules of origin), supply-side constraints appear to have played a greater role.

114. In June 2000 the EU and the ACP States signed a successor agreement to the Lomé IV Convention, referred to as the "Cotonou Agreement", which stresses compatibility with the WTO trading regime and envisages replacing the Lomé non-reciprocal preferential trading arrangements by regional free trade areas (RFTAs) between EU and regional groupings of ACP countries after a transitional period. One of the major features of the Cotonou Agreement is that it extends the non-reciprocal preferential access for certain ACP agricultural and other goods to the EU market for a transitional period of eight years (March 2000 to end of 2007). The commodity protocols (sugar, beef, bananas, and veal) traditionally annexed to the Lomé Convention were included in the new Agreement. In addition, the Agreement provides for cooperation between ACP and EU in trade-related areas such as competition policy, intellectual property rights, standards of certification, sanitary and phytosanitary measures, trade and environment, trade and labour standards, consumer policy and public health. It was felt that the switch from Lomé preferences to RFTAs could be particularly detrimental to African LDCs. However, in view of the many provisions of the Cotonou Agreement that are geared towards enhancing the capacities of ACP countries in production, supply and trade, it was argued that it could offer more scope for improving export growth in LDCs generally.

115. In addition, LDCs in Africa can also benefit from the United States Trade and Development Act of 2000, which extends certain trade benefits to sub-Saharan African

[16] *Ibid.*

countries. The Act is much less comprehensive than the Cotonou Agreement, and the main difficulty that is likely to arise in practice relates to eligibility requirements and rules of origin.

116. More recently, the EU announced a unilateral trade concession that would eliminate all existing tariffs and quotas on all imports from LDCs. Referred to as the 'Everything But Arms' (EBA) proposal, the intention is to extend complete access to all exports from LDCs except arms and ammunitions, with a three-year phase-in for 'sensitive' goods - i.e. bananas, sugar and rice.

2.4 Regional trade agreements

117. Regional integration continues to be an issue of great concern in LDCs and is viewed as a vehicle for promoting cooperation in agriculture and enhancing food security at the national and regional/subregional levels. For LDCs as a whole, there is a potential for their participation in intra-regional trade in agricultural products that has not been fully exploited and which could be particularly beneficial in view of the small size of their domestic markets.

118. The LDCs have been parties to numerous regional trade agreements (RTAs), the vast majority of which are among African countries. Despite their many provisions regarding the removal of trade barriers, the level of intra-regional agricultural trade in the majority of RTAs of which LDCs are members has stagnated at a low level. This has particularly been the case in Africa, where LDCs predominate (See Annex Table 15).

119. All such trading efforts have come up against structural and policy obstacles. With a few exceptions, there is not much diversity in natural endowments among countries within most of the existing RTAs. Complementarity of resources and contrasts in comparative advantage are clearer between than within the country groupings. Other difficulties include inadequate international transport and communication facilities and poor information about markets and investment opportunities. Moreover, the absence or inadequacy of a system for standardized packing, grading and quality control systems at the regional level continues to frustrate efforts to expand trade and establish transparent information systems. Improvement and harmonization of inspection and certification systems are among the missing ingredients for promotion of intra and extra-regional trade. Inadequate financing and guaranteeing of regional exports/imports has also been a factor.

120. Essential requirements for promoting intra–regional trade from which LDCs can benefit are thus the opening up of regional agricultural markets, developing export standards and infrastructures and securing greater coordination among LDCs in general and within and between existing subregional groupings.

B. Agricultural Prospects in the Light Of The WTO Agreements and their Aftermath

121. The major external challenge facing LDCs is their ability to exercise their rights and meet their obligations under the new multilateral trading system. Given their high dependency on agriculture for jobs, food, national income and export earnings, they have a large stake in

the current and future trade negotiations in agriculture. Multilateral reforms undertaken in the WTO context both expand their opportunities and amplify the costs of their inherent structural weaknesses and policy failures.

122. Of the 48 LDCs, 29 are at present WTO members. Six more are in the throes of accession and three have observer status. The Agreement on Agriculture that emerged from the Uruguauy Round began a process of bringing the trade-distorting agricultural policies of developed countries under multilateral rules and disciplines[17]. This section examines the implications of that Agreement and of other WTO Agreements for agriculture in LDCs.

123. The major factors contributing to the crucial importance of multilateral agreements and negotiations on agriculture are i) the predominant role of agriculture in their economies; ii) the relatively high degree of openness of most of their economies; and iii) their increasing reliance on international trade for satisfying domestic food consumption requirements.

1. Impact of the Agreement on Agriculture

124. For a number of reasons it is difficult to assess, in either quantitative terms or in terms of policy implications, the probable impact on agriculture in LDCs of the Agreement on Agriculture[18]. In respect of policy changes the LDCs, along with all other WTO members, have had to remove non-tariff measures and bind all agricultural tariff lines, but they were exempt from tariff reductions. Most LDCs generally bound their tariffs at levels above the applied rates (Annex Table 16). All have declared that they have not provided any support to agriculture that is subject to the reduction commitment. In fact, many do not subsidize agriculture at all but tax the sector explicitly, by taxing production and exports of many commodities, or implicitly, by giving higher protection to industry. Overall, the scope for LDCs to support agriculture through measures exempt from the reduction commitment (including green box measures and the *de minimis* provision) is considerable; however, such measures require financial outlays which most LDCs cannot afford.[19]

125. Research undertaken in FAO and elsewhere indicates that, on the whole, trade liberalization under the UR could worsen the terms of trade for LDCs, which are mostly net importers of food and net exporters of tropical products. On the export side, changes in market access conditions resulting from the UR are not considered to contribute markedly to boosting global trade and raising the prices received for most traditional primary agricultural commodities exported by the LDCs. On the one hand, the impact on tropical commodities, intensively produced and exported by the LDCs, is likely to be modest, as the level of protection was already relatively low for most of these commodities. On the other hand, for temperate-zone products, such as vegetables and fruits and cereals, the effects of trade liberalization are potentially larger, but they are not major export items for most LDCs.

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[17] Other Agreements which bear on agriculture include: the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS), the Agreement on Technical Barriers to Trade (TBT); the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and the Decision on Measures Concerning the Possible Negative Effects of the Reform Programme on Least Developed Countries and Net Food-Importing Developing Countries.

[18] Among these reasons are the difficulty to establish a counterfactual scenario with which to compare actual outcomes, the relatively short period involved for analysis and the absence of steep reductions in support and protection.

[19] See FAO, Rome (2000), *Multilateral Trade Negotiations on Agriculture. A Resource Manual: II - Agreement on Agriculture.*

126. As for food products, the expected increase in world market prices for basic food staples and other selected agricultural commodities is projected to have little effect on domestic food production in LDCs because of the severe supply-side constraints and in consequence their food import bills will increase.

2. Opportunities for export diversification

127. It is generally acknowledged that supply side problems have historically played a dominant role in limiting export diversification by LDCs into non-traditional commodities and processed products. Indeed, many of today's developing countries with diversified agricultural export structures were at one time heavily dependent on primary agricultural commodities, e.g. Malaysia, Thailand, Indonesia and Chile. They achieved this diversification despite facing a similar external trading environment common to all developing countries; indeed, in some respects it was worse as, by and large, they did not benefit from preferential trading arrangements. Many LDCs failed to diversify their exports despite their having received trade preferences from the developed countries.

128. The UR initiated the process of opening up new opportunities for export diversification in agriculture, through, *inter alia*; across-the-board reductions in MFN tariffs on agricultural products; reduced tariff escalation, albeit limited; and the strengthening of trade rules, particularly those on sanitary and phytosanitary measures and technical barriers to trade. As discussed above, prospects for growth in LDCs are more promising in new crops and processed products than in traditional primary commodities.

129. While many traditional primary commodities exported by the LDCs suffered from slow growth in world import demand and a decline in real world prices, world trade in several non-traditional agricultural commodities (NTCs), particularly, but not exclusively, horticultural products, has been growing relatively fast and exports of such products are becoming increasingly important for some developing countries. [20]

130. Another potentially beneficial effect of the WTO Agreements for the development of value-added industries in LDCs is the reduction in tariff escalation. Tariffs have generally been higher on processed agricultural products than on primary commodities. This tariff wedge between a processed product (e.g. orange juice) and its corresponding primary commodity (e.g. oranges) has been one of the obstacles in commodity-exporting countries in their efforts to establish processing industries for higher value exports. An analysis of tariff escalation has shown that tariff wedges have on average fallen from the pre-UR level of 23 percent to 17 percent.[21]

131. While LDCs do export a range of processed products, such as coffee extracts, cocoa pastes, crude vegetable oils and leather, the post-UR tariff rates on these products are relatively low and the lessening of tariff escalation will consequently not provide many

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[20] For example, an FAO study on EU, Japan and the United States has estimated that their total value, which amounted to 19 percent of world agricultural imports in 1994, grew at a rate of 10.9 percent per annum during 1985-94, compared to 5.8 percent per annum for other agricultural imports. (FAO, Committee on Commodity Problems, *Impact of the Uruguay Round on Agriculture: Follow-up Activities*, CCP 97/16, February 1997).

[21] See Lindland J. (1997), *The impact of the Uruguay Round on tariff escalation in agricultural products*, FAO, ESCP/No. 3.

additional export opportunities. On the other hand tariff escalation has been substantially reduced for many important processed commodities that LDCs do not export at present but could well do so in the new situation. Such potential exports include: cigarettes, some dairy products, and certain animal foodstuffs to EU; wine, some dairy and meat products to Japan; and orange juices and certain dairy products to the United States. Sanitary and phytosanitary standards play an increasingly prominent role in trade in processed products, especially foodstuffs, and this is an area where LDCs will need to do much more if they are to exploit the new opportunities.

132. Many other issues have arisen from the implementation of the UR Agreements, as well in the new negotiations on agriculture, that are of particular concern to LDCs in respect of improving their market access and developing domestic export capacities, some of which are summarized below.

Improving market access for agricultural exports

133. Many LDCs indicated that the AoA has not brought about any real improvement in market access for their agricultural exports, mainly because of the erosion of their tariff preferences, the persistence of tariff peaks and tariff escalation in some sectors of particular interest to them and the high SPS standards imposed in the importing countries. In the current negotiations on agriculture they look to ensure that there really will be an improvement in market access, especially for those products with a high growth potential and high value. Thus, they have an interest in reducing border protection and tariff escalation in the developed and developing countries and in ensuring that the beneficiaries of preferential arrangements are compensated for the loss or erosion of such preferences and assisted in adjusting to a more competitive environment.

Special and differential treatment

134. Under the WTO agreements, LDCs have received special consideration in respect of market access, implementation of their various commitments and technical and financial support. However, LDCs have been disappointed with the limited implementation of the special and differential treatment (SDT) provisions of the agreements, particularly as regards financial and technical assistance. This is particularly the case with respect to the SPS and TBT Agreements. Because SDT provisions were often expressed as "best endeavour" obligations, many LDCs have suggested that these should be included as binding commitments in a development box.

Food safety and quality standards

135. Another major challenge faced by LDCs is raising the SPS/TBT standards of their exports to at least internationally recognized levels. Because of their poor capacities in scientific research, testing, conformity and equivalence, they face difficulties in meeting international safety and quality standards. The task is even more daunting when the developed countries, on risk assessment grounds, adopt higher standards than those currently recognised by international standard-setting bodies. Moreover, rising consumer concerns in the affluent

countries over food safety and quality compound the difficulty of the developing countries in meeting ever higher standards. Fulfilment of the promises of financial and technical assistance to LDCs, and other developing countries, in respect of SPS/TBT standards is thus important to them.

Compliance with the TRIPS Agreement

136. The requirement for countries to provide for the protection of plant and animal varieties, either by patents or by effective *sui generis* measures, presents a number of challenges for developing countries. The lack of plant variety protection and of sufficient capacity to provide rapidly such protection in most developing countries may hamper their ability to comply with this requirement. In addition, patentability of plants and animals raises a range of controversial issues relating to its implications for food security, rights of local communities and indigenous peoples, biosafety and sovereign rights over genetic resources. The provision of the TRIPS Agreement are also significant for input industries and may, in the short to medium-term, increase costs of developing and acquiring farm technology. Likewise, debates on genetically modified products, which involve also the SPS and TBT Agreements, continue to require analysis of their implications for the development and dissemination of new technologies and their consequent effects on small farmers and low-income countries.

3. Food security

137. The special situation of LDCs was recognised in the Ministerial Decision on *Measures Concerning the Possible Negative Effects of the Reform Programme on Least Developed and Net Food-Importing Developing Countries*. To date, the *Decision* has not been activated, despite the fact that food aid has dropped to very low levels and food import bills of LDCs and NFIDCs have risen. Implementation has so far been hampered by several factors, including: the requirement for providing evidence that the reform process led to difficulties; and the variety of instruments envisaged under the *Decision* to respond to such needs, without the respective responsibilities of all concerned being clearly specified. The basic consideration, however, is that the Decision addresses a transitional problem, whereas the food security problem in the LDCs is a long-term and complex one, encompassing broader development issues that go beyond trade.

138. Changes in the global economy are raising the stakes for domestic agricultural policy reforms in LDCs. The main concern is that while the WTO regime imposes disciplines on subsidized agricultural exports, it is likely to hurt poor agricultural producers in LDCs, who will become more vulnerable to instability in world prices as border protection is lowered. Although price instability on world markets affects all countries, the consequences can be much greater for LDCs for two reasons: i) a large proportion of the rural population still earns a living from food production; and ii) food accounts for a large share of household expenditure.

III. POLICIES TO FULLY EXPLOIT AND DEVELOP THE AGRICULTURAL POTENTIAL

139. Sustained and accelerated development of agriculture is the key to economic development and poverty reduction in the LDCs. The preceeding sections shown that they have considerable agricultural potential, but that it has not been realized for a number of reasons, including structural and technological constraints, inappropriate domestic policies and an unfavourable external economic environment. As a result, the growth of these economies has been slow, undernourishment has been increasing and the marginalization of these countries in the global economy has continued.

140. The challenges facing LDCs are numerous enough to strain their capacity to design and implement effective policies and institutions for agriculture. However, development is a cumulative process, with success in one area opening up opportunities in others. The focus of this section is on the identification of measures to alleviate the supply-side constraints, and to improve agricultural productivity and competitiveness in the framework of a strategy that is poverty-alleviating, balanced, sustainable and based on comparative advantage. The analysis draws on FAO's field experience, including its policy assistance work in the LDCs, together with new policy approaches for accelerated agricultural development based on the past 30 years of development experience.

A. Lessons from Experience

141. In view of the critical importance of agriculture in the majority of the LDCs, it is important to understand how their agricultural growth can be accelerated, the priorities that are involved and the impact of faster growth on poverty levels.

142. Over the past three decades there have been wide variations in the nature and components of growth among different countries and between sub-sectors of agriculture within them. However, in a number of cases there has been rapid growth of the agricultural sector, with major effects on poverty reduction and national economic development, from which some useful and relevant lessons can be drawn. One important lesson is that it is necessary to establish priorities and a sequencing of activities. Governments can only do a certain amount at any given time. Most activities must be taken up by the private sector and through the operation of markets so as to free governments to concentrate on those areas where the private sector cannot be expected to come forward.

143. There is no unique set of physical conditions for rapid agricultural growth. Nor is there a single set of activities that will guarantee success. It is nevertheless possible to identify common patterns and themes from success stories:

- The three principal means of increasing output (area expansion, changes in output mix, and technical change) vary in importance and are a function of the stage reached in growth. Possibilities of area expansion are finite: as more land is cultivated area expansion becomes of declining importance. But changes in both output mix and

technology preserve their importance throughout the development process (neither is effective on its own), and require a dynamic and flexible sector;

- It is necessary to provide appropriate incentives to farmers and to ensure conditions that permit them to respond to the incentives. To that end there must be sound macro-economic policies allowing both trade in agricultural products and their supply to the domestic market and an institutional and physical infrastructure that support broad-based change (by facilitating access to land, rural finance, technical knowledge, communications and transport);
- The commodity base for agricultural growth can vary (for example, it may consist of traditional or non-traditional exports, or of staple foods), but intensification and a switch away from staple foods are natural as economic growth spreads its net more widely, stimulating local demand for more labour-intensive, high income-elastic products such as vegetables, fruit and livestock products. The agricultural sector thus needs to be dynamic and flexible;
- Technical change also needs to be a continuing process, but in staple food production this is a large and complex undertaking to which the private sector and producer organizations are not well suited, although experience has demonstrated that it cannot be left solely to public bodies. An indigenous system for generating technical change is necessary if the technology is to match changing local needs;
- The effects and benefits of agricultural growth are diluted by high population growth and/or by its being limited to small geographical areas or regions or to a small number of commodities. Linkages and multipliers between agricultural and non-agricultural activities are also important but may be absent. For broader growth and poverty reduction, agricultural development needs to be broad-based, with small/medium scale rural industries. The development of such industries requires appropriate industrial policy and is a further justification for improving rural infrastructure, services and institutions.

B. Challenges for Agricultural Development in a Globalized Economy

144. The situation facing LDCs and their farmers today may be more difficult in a number of ways than that which was faced by developing countries that achieved sustained agricultural growth in the last three decades. As discussed in Sections I and II, the new and emerging challenges confronting them can be identified under three broad headings: overcoming their marginalization resulting from integration of markets due to globalization and liberalization; adapting to technological change; and coping with the new institutional environment.

145. *Globalization of markets:* The economies of LDCs now have to compete in a more fiercely competitive world market. The gradual removal of trade barriers, rising demand for higher quality products and higher standards, the continuous erosion of trade preferences and the costly compliance with the new trade rules are particular problems that hamper the competitiveness of producers in LDCs in both world and domestic markets. Because of

globalization and liberalization, LDCs are also becoming more vulnerable to changes in world market conditions, on account of their small economic size and their increasing reliance on imports for food supplies. Their problems have been compounded by the long-term decline in real prices of their major primary commodity exports, despite some temporary increases experienced in the early 1990s.[22] The consequent decline in the commodity terms of trade has reduced both the incentives to engage in the production of tradables and the gains and economic stimulus from such production.

146. *Technological challenges*: Keeping pace with the increasing domestic demand for food, meeting requirements for enhancing competitiveness and ultimately raising rural incomes, necessitate raising agricultural productivity. As discussed in Section I, most LDCs are at an early stage of agricultural technology and the potential to increase productivity is enormous. However, sustained agricultural growth in most cases requires more than the ingredients of the 'green revolution'. In particular, it calls for substantial investment in irrigation and rural infrastructure, human development and institutions. New developments in biotechnology may pose further threats to export-based growth in LDCs if the new technologies associated with them result in a sharp increase in productivity in more advanced economies, thereby increasing production, pushing down prices, and giving them a competitive advantage over producers in LDCs.

147. *The institutional environment*: The institutional environment (both nationally and internationally) is also very different from the past. As noted in Section II, international trade is subject to WTO disciplines and takes place in a globalized context. The roles and modus operandi of the IMF and the World Bank have also changed, associated with liberalization and structural adjustment programmes in member countries. Perhaps the most important consequence has been the sweeping away of much of the public sectors'involvement in agricultural research and extension and in commodity and financial markets. Inefficient and ineffective as it often was, the role of state interventions in supporting agricultural growth in earlier success stories is now clearly recognized, and has resulted, for example, in arguments being put forward for a reassessment of the performance of state marketing boards in Africa.[23] However, current attitudes among donors and within LDCs do not favour efforts to involve the State in the search for innovative solutions to some of the institutional problems that it has successfully addressed in the past. Moreover, some donors and governments perceive previous unsuccessful attempts to stimulate agricultural development as evidence that policy support to agriculture is not an important priority in seeking broad-based, poverty-reducing economic growth, an attitude that is reflected in the reduced share of ODA going to agriculture.

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[22] In 1999 the combined price index of soft commodities (i.e. all commodities other than minerals and metals and petroleum), deflated by the price index of manufactured exports of developed countries, was one half of the average for 1979-1981 which was about the same as the average for 1970. For tropical beverages and basic food, the decline was steeper. See the report by UNCTAD, "World commodity trends and prospects", distributed to the United Nations General Assembly under cover of A/55/332, August 2000, sect.II.

[23] See, for example, Dorward, A, Kydd, J and C Poulton (1998), "Conclusions: New Institutional Economics, Policy Debates and the research Agenda" in Dorward A, Kydd J and Poulton C (eds), *Smallholder Cash Crop Production under Market Liberalisation: A New Institutional Economics Perspective*, CAB International, Wallingford; and Reardon, T, Barrett, C, Kelly, V and K. Savadogo (1999), "Policy reforms and sustainable agricultural intensification in Africa", *Development Policy Review*,. Vol. 17, pp. 375-395.

148. Against all these difficulties there are also some new opportunities for agriculture in LDCs. New technologies are bringing down the cost of communications dramatically,which should benefit remote, more sparsely populated areas with poor roads. Biotechnology (with appropriate safeguards) offers opportunities for more rapid technological advances if there is sufficient investment in their application to the crops and problems to LDCs. In addition, globalized markets and the implementation of trade agreements should bring benefits for LDC exporters if they can be assisted in overcoming their supply and competitiveness contraints. Policy makers may be swinging back to a more balanced and nuanced understanding of the importance of agriculture and of the potential roles (and pitfalls) of state support.

C. Measures to Accelerate Agricultural Development and Trade Competitiveness

149. This section outlines some general recommendations for both national policy actions and international actions for removing supply bottlenecks, boosting competitiveness and alleviating poverty and food insecurity in LDCs. The proposed policies may differ widely in their relevance to different countries, depending on the nature of their agricultural development problems, resource availability and economic conditions.

1. General measures and strategies to support agricultural development

150. First, emphasis needs to be given to increasing the production of tradable products, which is an essential component of agricultural growth and normally the driving force behind it. This calls for an appropriate set of macro-economic policies appropriate to the country's specific economic conditions, adoption of a technology suited to current farm conditions, and a communications infrastructure and marketing and institutional arrangements that support farmers' access to seasonal and longer term capital and inputs and provide them with strong price incentives. Determining the most appropriate respective roles in this regard for government agencies, donors, civil organizations, and commercial entities requires an imaginative and innovative approach, with greater emphasis on policy support and sharing of best practice (as is done, for example, through the FAO South-South partnership programme).[24]

151. Technology, resource use, institutions, knowledge and markets need to be adapted to deal with bottlenecks or constraints affecting particular commodity systems, in order to respond to problems of natural resource exhaustion or degradation, and ensure that advantages of new opportunities are taken through diversification. Local technological research capacity may be important in this respect, but policies and institutions and the ability of farmers to access resources, as noted in the preceding paragraph, will also be critical. Again, a range of different types of actors may need to support processes of change, in which governments may play a critical institutional role. Land reform is a highly controversial form of institutional

[24] At the heart of this programme is an exchange of knowledge and experience among developing countries. In this scheme, the more advanced developing nations send experts and technicians to work directly with their counterparts and farmers in other developing countries.

change that has not been given much attention in this paper – but that does not imply that land tenure systems may not be a serious impediment to growth in particular circumstances[25].

152. Sustained agricultural growth may also be promoted by, in particular, linkages that promote production of what are non-tradable products in practice in most LDCs (crops, livestock and forestry products) for local consumption. This may be further enhanced by economies of scope in more widespread investment in infrastructure in rural areas and by farmers, on the basis of suitable institutional arrangements, using equipment acquired or developed for cash crop production to enhance production for local markets.

153. In order to meet the challenges of new problems facing LDC agriculture, policy makers need to give renewed emphasis to understanding and promoting processes supportive of agricultural research. In addition, tariff protection may be necessary to protect farmers in LDCs from some of the less benign effects of globalization and to raise incentives for domestic production. There are also strong arguments for strengthening the role of the State in promoting efficient and effective institutional arrangements to support farmers' access to seasonal finance and to input and output markets. Finally, there is need for continued attempts to reform international trade rules with a view to ensuring fuller participation of LDCs in world agricultural markets.

2. Recommendations for national and international action

154. Meeting the new challenges facing agriculture and integrating LDCs more fully into the world economy will require a renewed focus on agricultural and rural development. With the support of their development partners, governments of LDCs may need to formulate or revise and effectively implement their agricultural development strategies. The basic elements and priorities of such strategies, include: further emphasis on macroeconomic and sectoral incentives; strengthening institutional capabilities; raising and sustaining productivity and competitiveness; diversifying production and trade; and improving access to foreign markets[26].

155. This subsection briefly elaborates these priorities placing stress on the key measures needed to increase resources available to agriculture and use them more efficiently.

2.1 Macroeconomic and sectoral policies

156. The challenge facing LDCs is to establish a stable and efficient policy environment that encourages investment in enhancing the productivity of agriculture and contributes to bringing about the necessary structural changes. Many LDCs have adopted policies to

[25] Mellor (1995) observed that more equitable land tenure relations may contribute to growth by strengthening consumption linkages rather than by directly promoting agricultural productivity *per se*., although this observation runs counter to the conventional wisdom of an inverse relationship between farm size and efficiency in land-scarce traditional agriculture. In sub Saharan Africa there is often more concern about traditional land tenure systems inhibiting investment in land improvement and putting it more productive uses, but the evidence for this is mixed and it is probably not possible to reach any general conclusions. (Mellor, J.W. (ed). (1995). *Agriculture on the Road to Industrialization*. IFPRI/Johns Hopkins).

[26] See the series of "National agricultural development strategies towards 2010" prepared by FAO in 1997 for a number of LDCs.

deregulate agricultural markets, reduce price distortions, and allow a greater role for the private sector. Macro-economic policy is an important tool in support of agricultural growth. Stable prices (including foreign exchange and interest rates) are important to provide domestic and foreign investors with confidence and to allow farmers and traders to take informed, long-term decisions. At the same time realistic exchange rates, low tariffs and effective price systems are required to ensure that agricultural producers and consumers face price and other incentives that reflect the comparative advantages, opportunities and resource costs of society as a whole, and promote productive resource use and investment.

157. Such measures, although necessary, are not sufficient. Improved investment incentives also require policies that improve access to markets, ensure dissemination of information, set standards and provide an adequate legal and regulatory framework. Strong complementarity between public and private investment is also necessary to sustain agricultural growth, with governments investing in sectors having an important public good element such as research, extension, and infrastructure – particularly roads, education, norms and standards.

2.2 Institutions

158. The least developed countries need to undertake policies and measures aimed at strengthening the ability of their institutions to operate efficiently. Weaknesses in the structure and capacities of rural and related institutions are one reason why economic policy reforms have failed to achieve the desired increase in aggregate agricultural output in many African LDCs. [27] Rapidly changing agricultural technology, specialisation, and trade require a complex set of institutions. Governments must diagnose these requirements and determine the respective roles of the public and private sector and how the two complement each other. Political, legal and economic institutions play a major role in determining both macro-economic and sectoral policies. Improved formulation and implementation of these policies often requires wide-ranging institutional changes.

159. For the agricultural sector growth requires the development of appropriate institutional arrangements for overcoming market constraints for agricultural products (for example, specific contractual arrangements between farmers and traders). In the context of declining real world prices for the main agricultural commodities exported by LDCs, improved mechanisms for the transmission of international prices to domestic producers is of key importance. The involvement of an increasingly competitive private sector in these various commodity markets has driven down margins and allowed greater returns to producers.

2.3 Enhancing productivity and competitiveness

160. The experience of countries with a similar agroecological base to that of LDCs - maize in Zimbabwe, rice in Vietnam, horticulture in Kenya, cocoa in Cote d'Ivoire and cotton and rice in Mali- demonstrates that there is much potential for raising agricultural productivity in LDCs also. These limited but promising areas of success in other countries can serve as a

[27] See Global Coalition for Africa: "Promoting agricultural productivity and competitiveness in Sub-Saharan Africa." Economic Committee Meeting, Nairobi, Kenya, April 1999.

model for LDCs. Research has shown that not only the domestic terms of trade for agriculture, but also the content of capital input are key determinants of agricultural productivity and competitiveness. Important in this respect are rural infrastructure development; strengthening research and extension services; enhancing human capital in rural areas through health, education, and access to productive resources; and preserving the capacity of the natural resource and environment to sustain productivity achievements. While the main focus of the current reforms in LDCs has been on macroeconomic and price policies, it is the weaknesses in this area and require substantial increases in investment in agriculture, by both the public and the private sectors, if they are to be overcome.

161. To that end an appropriate and well-sequenced combination is needed of:

- sound and stable macro-economic policies;
- technology that is productive and robust under farm conditions;
- a strong institutional environment;
- a communications infrastructure and market and institutional arrangements supporting farmers' access to seasonal and longer-term capital and inputs and providing them with strong price incentives.

162. Sequential removal of constraints is critical. When the increase in production associated with a reform or change in circumstance reaches a plateau another reform/series of reforms is required to unleash further potential. Sustained growth is only possible if new constraints are alleviated by further reforms. There also needs to be a dynamic ability for technology, resource use, institutions, knowledge and markets to be adapted to deal with successive bottlenecks or constraints affecting particular commodity systems, to respond to problems of natural resource exhaustion or degradation, and to diversify to take advantage of new opportunities.

163. Policy makers need to give renewed emphasis to understanding and promoting processes supportive of agricultural growth and increased emphasis is needed on agricultural research to address the problems facing farmers in non-green revolution areas. There are strong arguments for seeking more nuanced role for the State in promoting efficient and effective institutional arrangements to support farmers' access to seasonal finance and to input and output markets. Finally, there is need for continued attempts to reform world trade rules that impede the fuller participation of LDCs in world markets.

2.4 Diversification of production and exports

164. Excessive dependence on a narrow range of products has a number of important consequences: it exposes farmers unduly to the vagaries of climate, pests and diseases and to price fluctuations; leads to fluctuations in farm income and government revenue; contributes to environmental degradation; may result in failure to take advantage of complementarities (e.g. between livestock and crops); and has negative effects on diet and health. In addition, adverse international terms of trade facing the primary agricultural commodity sector are a further constraint on growth of the sector.

165. There is a clear need to diversify the production and export base (both horizontally and vertically) from low value added to high value added products. The challenge is to initiate and sustain the momentum for diversification in order to realize the considerable potential that undoubtedly exists.

166. A plethora of measures at different levels will be necessary, the most important of which are: the maintenance of a stable and predictable macroeconomic and political environment; establishing a fair and open regulatory framework; improving the efficiency of financial institutions, strengthening research and extension for developing and adopting relevant technology; improving rural services; upgrading the marketing, transport and communication infrastructure; and development of human resources.

167. Areas and commodities on which the diversification programmes focus should be selected on the basis of potential viability as well as technical sustainability. A multidisciplinary and holistic approach needs to be adopted to all aspects of diversification and not only to production. Activities involved relate not only to on-farm production technologies but also to upstream and downstream constraints to production such as input supply, technical advisory services, storage, processing and marketing. While the focus of such programmes in LDCs may require a rapid increase in productivity, the approach should be holistic to ensure that all major issues affecting diversification are taken into account in an integrated manner.

168. The FAO Special Programme for Food Security (SPFS) has shown that many LDCs have great potential to diversify production and exports into tree crops, fisheries, small animal husbandry and agro-industries. Diversification of production could cover: i) introduction of aquaculture, artisanal fisheries development, small animals (poultry, sheep, goats, pigs etc.) and tree crops; intercropping of trees and field crops; ii) training in use of crop residues for animal feed; iii) introduction of low-cost methods of animal disease control; iv) support for post-production activities to promote income generation; and v) development of agro-industries.

169. On the trade side, diversification should be encouraged into newer and where possible higher-value export products. The trading partners of LDCs can contribute by maintaining preferential market access for such exports and where relevant by reducing tariff escalation on processed agricultural products with export potential.

2.5 Access to foreign markets

170. So far, the implementation of the Agreement on Agriculture has not led to significant improvements in market access for the LDCs, for reasons noted earlier in this paper, such as the persistence of tariff peaks and tariff escalation and the high SPS standards set in their main import markets. However, the major challenge facing agriculture in LDCs is the erosion of the non-regional trade preferences they have hitherto enjoyed. Many countries, both developed and developing, have expressed their intentions of according them more favourable treatment. The Quad countries, for example, have proposed to implement both tariff-free and quota-free treatment, consistent with domestic requirements and international agreements, under their respective preferential schemes, for essentially all products originating in LDCs.

171. A key interest of LDCs in the current negotiations on agriculture is to ensure that the negotiations result in tangible improvements in market access for their exports, especially those with a high growth potential. While they welcome the emerging consensus in WTO on duty-free and quota-free market access for their products, they consider that these commitments should be *binding* and be applicable to *all their products*.[28] They argue that any market access concession they obtain should be made predictable and not subject to autonomous changes.

172. Other developing countries, along with the OECD countries, could improve access of LDCs to their agricultural markets by, inter alia: i) lowering tariffs and reducing or abolishing export subsidies; ii) reducing tariff escalation; and iii) encouraging the flow of foreign direct investment in LDCs to improve technology and knowledge transfer.

2.6 Multilateral trade rules on agriculture

173. The WTO trading regime offers opportunities to LDCs but also poses challenges. If they are to develop fully their agricultural potential, they will need, as will the WTO members in general, to address the following issues:

Rule making in favour of LDCs: WTO rules should be supportive of the development of LDCs. In particular, they should be made compatible with their institutional, human capital and infrastructure requirements in order to permit them to benefit fully from the global trading system. The specific concerns of LDCs need to be reflected in the structure, framework and long-term objective of the Agreement on Agriculture.

Capacity building for trade: LDCs have neither the institutional capacity nor the human resources to face all the challenges or take full advantage of the opportunities flowing from the multilateral trading system, and to participate fully as equal partners in new WTO negotiations on agriculture. Technical and financial assistance to build capacity is therefore essential, especially in the following areas:

- Developing and strengthening institutional capacity to meet international standards, e.g. in food safety and quality;
- Strengthening the capacity in multilateral negotiations, in particular assisting them to deal with problems confronted in honouring their WTO commitments, including follow-up of decisions in their favour, and to take advantage of trading opportunities;
- Strengthening their capacity to analyse trade issues in the context of the continuation of the reform process;
- Assisting non-members of WTO to achieve accession on terms consistent with their development and food security needs;
- Implementing the Integrated Framework for Trade-Related Technical Assistance to LDCs as recognized in the WTO Plan of Action for LDCs adopted in 1996 at the first WTO Ministerial Conference.

[28] OAU/AEC (2000), "Current developments on issues of interest to African countries in the context of post-Seattle WTO negotiations" (OAU/AEC/TD/MIN/2 (III)), Annex III.

2.7 External assistance

174. LDCs face a major domestic resource gap in generating the investments needed to achieve their developmental objectives in agriculture, including the target of halving the number of under-nourished people by 2015. External assistance is needed to accelerate agricultural productivity, which is dependent on the availability of sustainable alternative technologies and farming practices that will not further degrade the natural resource base.

175. Experience has shown that foreign aid has played a major role in almost all success stories of agricultural development. Its role was critical in the Green Revolution, and it has always been a key element in institutional development. If the donors' current goal of poverty reduction is to be met, external assistance to agriculture in LDCs will need to be restored to, and indeed exceed, its earlier levels.

176. In this regard, and in view of the importance of agriculture for poverty reduction and economic growth in LDCs, current initiatives to provide financial assistance to LDCs through targeted debt relief and other financial assistance could pay special attention to efforts to exploit their sustainable agricultural potential.

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Table 1. Food and agricultural production, consumption, and trade in LDCs, 1970-1997 (annual average percentage growth in value)

Commodity group/commodity	Production			Consumption			Imports			Exports		
	1970-79	1980-89	1990-97	1970-79	1980-89	1990-97	1970-79	1980-89	1990-97	1970-79	1980-89	1990-97
Basic foodstuffs	1.78	1.91	2.40	2.40	2.33	2.26	4.43	3.12	2.51	-5.95	-7.92	9.23
Cereals	0.65	2.05	2.32	1.96	2.79	2.21	4.07	0.79	2.66	-5.70	-10.66	-1.99
Wheat	2.53	0.67	5.53	3.59	2.73	4.49	3.25	3.40	4.21	-15.57	20.51	35.72
Rice, milled	0.51	2.24	1.75	1.93	3.09	1.69	4.22	-0.61	1.20	-6.31	-13.98	-10.24
Coarse grains	0.80	1.54	3.98	1.60	1.71	3.45	6.13	-2.45	3.26	0.39	0.83	-1.26
Maize	3.26	3.98	1.66	3.55	3.02	2.64	9.39	-3.30	-0.14	-20.86	16.84	1.29
Millet & sorghum	0.45	1.07	4.08	1.21	2.51	2.25	7.12	-10.37	4.88	15.32	-1.65	-3.87
Other coarse grains	-1 42	-1.19	7.65	-0.07	-1.53	6.96	0.64	2.41	8.11	-2.00	14.54	-10.59
Root crops	2.71	2.18	1.68	2.71	2.27	1.64	-2.05	7.73	-10.32	-9.58	-5.36	-15.40
Cassava	1.88	2.97	-0.41	1.90	2.98	-0.29	-28.92	27.08	7.57	-9.97	3.26	-28.21
Fats, oils and oilmeals	1.89	1.35	3.07	3.23	3.08	3.28	5.38	8.74	7.68	-6.41	-5.23	5.06
Fats and oils	1.95	0.44	3.73	3.63	3.09	3.97	5.38	8.72	7.79	-9.39	-4.40	6.60
Oilmeal	1.81	2.43	2.33	2.57	3.04	2.15	5.25	10.41	0.26	-3.25	-6.19	2.91
Pulses	2.21	0.59	2.77	3.01	0.59	1.50	17.38	10.69	-1.89	-2.50	-5.12	14.69
Meat	1.73	1.89	2.56	1.96	2.00	2.47	6.76	5.17	-0.11	-12.38	-13.09	17.62
Beef and veal	1.49	1.69	1.68	1.81	1.88	1.54	1.30	6.17	-6.09	-14.99	-19.57	-3.86
Mutton and lamb	2.25	1.00	3.42	2.25	1.05	3.10	3.34	17.77	-30.27	12.66	-49.05	256.79
Pigmeat	1.26	4.85	4.12	1.31	4.94	4.02	-1.88	6.78	1.92	-27.87	-	-
Poultry meat	2.78	4.33	4.11	4.11	4.27	4.44	44.41	3.69	7.92	-19.68	-27.05	36.92
Dairy products	2.88	1.90	2.79	2.91	2.08	2.61	3.68	5.65	-1.62	-6.38	-1.68	24.30
Milk & milk products	2.86	1.91	2.74	2.89	2.12	2.53	4.19	6.62	-3.01	-5.98	-17.59	5.52
Butter	2.75	1.69	1.84	2.20	0.50	3.23	-1.32	-5.17	14.19	-5.76	0.91	35.16
Eggs	3.57	1.68	4.18	3.79	1.67	4.43	42.97	1.28	15.97	-20.57	-25.61	50.36
Other food commodities	0.51	2.22	1.15	0.96	2.41	1.51	2.57	2.08	7.19	-0.84	0.85	-0.43
Sugar	-0.84	0.95	1.75	0.14	1.81	3.72	3.93	1.98	8.02	-2.62	-2.61	0.85
Vegetables	2.16	2.74	1.67	2.17	2.76	1.79	3.82	7.12	4.73	8.40	18.32	-14.89
Fruits	0.27	2.16	0.86	0.19	2.27	0.94	5.24	-1.07	7.01	4.21	-2.47	-1.16
Tropical Fruits	-0.28	2.52	0.89	-0.20	2.49	0.92	4.44	-6.41	0.78	-7.07	4.11	-15.24
Citrus fruits	0.16	2.63	2.06	0.50	2.44	2.92	15.24	-6.95	33.96	-1.36	-0.52	-13.39
Tropical beverages	-2.28	1.26	0.43	3.94	2.14	3.35	-2.45	0.75	7.77	-1.82	1.51	-0.09
Tea	1.88	1.06	3.69	3.04	0.87	5.40	-1.63	-1.87	5.66	1.48	-1.51	3.49
Coffee	-2.82	1.21	0.01	4.23	2.01	2.80	-2.97	9.27	17.31	-2.13	2.10	-0.64
Cocoa	-0.95	3.38	-1.86	-0.66	26.92	0.86	-6.69	-5.50	13.28	-3.50	-2.83	0.15
Agricultural raw materials	-0.63	1.48	4.48	1.93	1.79	4.48	2.32	4.41	5.98	-3.12	2.04	3.00
Cotton	-3.78	3.92	7.75	0.17	5.88	10.33	0.24	6.14	3.11	-4.12	4.71	3.35

Commodity group/commodity	Production			Consumption			Imports			Exports		
	1970-79	1980-89	1990-97	1970-79	1980-89	1990-97	1970-79	1980-89	1990-97	1970-79	1980-89	1990-97
Jute	-0.61	-1.84	3.18	2.42	-0.73	3.76	4.60	-7.98	2.90	-4.67	-4.09	1.68
Sisal	-9.81	-7.80	-3.67	1.34	-0.81	-4.55	-43.89	-	-19.43	-10.88	-14.77	-1.79
Rubber	-2.12	3.15	2.94	6.13	0.30	-10.86	3.76	0.82	3.91	-3.10	5.76	15.79

Source: FAOSTAT (2000).

Table 2. LDCs: land resource potential

Country *	Actual arable land per caput (1994) (hectares) [1]	Potential arable land per caput (hectares) [2]	Land in use (1994) as percentage of potential arable land [3]
With relatively large land balance:			
Democratic Republic of the Congo	0.07	2.29	3
Mozambique	0.09	2.59	4
Central African Republic	0.63	11.15	6
Angola	0.33	5.38	6
Liberia	0.16	2.19	7
Guinea-Bissau	0.10	1.05	10
Mali	0.18	1.72	10
Madagascar	0.18	1.69	10
Zambia	0.67	4.86	14
Sudan	0.32	2.32	14
Chad	0.53	3.56	15
United Republic of Tanzania	0.23	1.44	16
Guinea	0.26	1.30	20
Gambia	0.12	0.55	22
Lao People's Democratic Republic	0.20	0.88	22
Burkina Faso	0.35	1.43	24
Benin	0.36	1.40	26
Sierra Leone	0.29	0.83	35
Myanmar	0.22	0.63	35
Ethiopia	0.21	0.52	40
Cambodia	0.46	0.93	49
Malawi	0.22	0.42	51
Nepal	0.11	0.17	65
Mauritania	0.24	0.36	66
With relatively limited land balance:			
Bangladesh	0.08	0.12	71
Togo	0.61	0.74	83
Uganda	0.36	0.42	84
Somalia	0.13	0.15	90
With almost no land balance:			
Burundi	0.20	0.15	130
Haiti	0.13	0.09	151
Yemen	0.10	0.06	156
Lesotho	0.17	0.11	160
Eritrea	0.15	0.08	201
Afghanistan	0.47	0.23	207
Rwanda	0.30	0.12	259

*Ranked in order of land use as a percentage of potential arable land.

[1] Land presently cultivated per caput of total population.

[2] Areas that are suitable for cultivation in terms of soil suitability and availability of water (rainfall or irrigation). Includes lands currently under forest or wetlands which are protected and not available for agriculture.

[3] High values indicate a low (or zero) reserve of available land.

Source: Adapted from A. Bot, F. Nachtergaele and A. Young, "Land resources potential and limitations at regional and country levels", *World Soil Resources Report*, Number 90, FAO, Rome, 2000.

Table 3. LDCs: agricultural value added per worker, 1979-81 and 1995-97

Country	Agricultural value added per worker (1995 US$)		Percentage change
	1979-81	1995-97	
Angola	241 [1]	117	-51
Bangladesh	181	221	22
Benin	302	504	67
Bhutan	106	148	40
Burkina Faso	134	159	19
Burundi	177	139	-21
Cambodia	361 [1]	407	13
Central African Republic	396	439	11
Chad	155	212	37
Comoros	415	386	-7
Democratic Republic of the Congo	270	285	6
Gambia	325	216	-34
Guinea	239	262	10
Guinea-Bissau	221	326	48
Haiti	578	407	-30
Lao People's Democratic Republic	460 [1]	526	14
Lesotho	498	319	-36
Madagascar	198	180	-9
Malawi	100	122	22
Mali	225	241	7
Mauritania	301	439	46
Mozambique	74 [1]	76	3
Nepal	162	188	16
Niger	222	190	-14
Rwanda	307	201	-35
Sierra Leone	368	404	10
Togo	345	510	48
Uganda	54	326	504
United Republic of Tanzania	152	159 [2]	5
Yemen	295	305 [2]	3
Zambia	331	226	-32
Sub-Saharan Africa	418	371	
Low and middle income countries *	..	567	-11
High income countries*	..	18 918	..

*As defined by the World Bank.
[1] 1985-87.
[2] 1990-92.
Source: World Bank (1999), *World Development Indicators 1999*.

Table 4. Yields of major crops in LDCs and other developing countries

Crop	Average annual yield in 1995-99 (tonnes per ha)		Average yield in LDCs as percentage of yield in all developing countries
	All developing countries	LDCs	
Wheat	2.64	1.48	66.0
Rice	3.70	2.54	68.0
Maize	2.86	1.23	43.0
Coarse grains	1.94	0.81	42.0
Fibre crops	0.64	0.52	81.0
Oil crops	0.48	0.22	47.0
Pulses	0.67	0.51	77.0
Roots and tubers	11.80	6.60	56.0
Vegetables	14.60	7.20	49.0

Source: Computations based on data from FAOSTAT (2000).

Table 5. Relative contributions of area and yield to growth in crop production in LDCs, 1981-89 and 1990-99

Crop	1981-89			1990-99		
	Average annual growth (percent)	of which due to: Area (percent)	Yield (percent)	Average annual growth (percent)	of which due to: Area (percent)	Yield (percent)
Total cereals	2.1	77.0	23.0	2.0	72.0	28.0
of which:						
Wheat	0.8	36.0	64.0	4.0	70.0	30.0
Rice	2.3	17.0	83.0	1.7	43.0	58.0
Maize	4.1	88.0	12.0	2.4	43.0	57.0
Coarse grains	2.7	118.0	-18.0	2.5	75.0	25.0
Fibre crops (cotton)	1.5	35.0	65.0	3.0	80.0	20.0
Oil crops	1.0	85.0	15.0	3.6	105.0	-5.0
Pulses	0.3			4.4	84.0	26.0
Roots and tubers	2.7	77.0	23.0	1.7	81.0	19.0
Vegetables and melons	2.8	69.0	31.0	1.8	62.0	38.0
Fruits	2.3	106.0	-6.0	1.0	99.0	1.0

Source: Computations based on data from FAOSTAT (2000).

Table 6. Share of LDCs in world livestock numbers in 1997-99 and in world output therefrom

	Share in world livestock (percent)		Productivity (kilograms of product per animal)	
	LDCs	**All developing countries**	**LDCs**	**All developing countries**
By product:				
Beef	4	48	113	167
Sheep and goat meat	11	70	11	13
Milk	3	39	115	414
Poultry meat	2	50	0.89	1.30
Pigmeat	1	57	46	72
By type of animal:				
Cattle and buffalo	14	77		
Sheep and goat	18	76		
Chickens	5	70		
Pigs	2	67		

Source: FAOSTAT (2000).

Table 7. Internal rate of return per unit of expenditure on agricultural extension and research, in developing countries, by region, and in OECD countries

Region	Extension Median return (percent)	Applied research Median return (percent)
Developing countries in:		
Africa	27	37
Asia	47	67
Latin America	46	47
OECD countries	50	40

Source: FAO (Rome, 2000), *The State of Food and Agriculture, 2000*, Table 16.

Table 8. LDCs: Per caput dietary energy supply (DES) 1979-81, 1989-91 and 1996-98 (kcal/day)

Country/region	1979-81	1989-91	1996-98
World	2 540	2 700	2 780
Developing countries	2 300	2 510	2 650
LDCs *	2 040	2 080	2 070
of which in:			
Africa	2 060	2 010	2 000
Asia	2 020	2 180	2 180
Pacific	2 380	2 340	2 410
Caribbean	2 040	1 770	1 840
Afghanistan	2 210	1 920	1 620
Angola	2 120	1 790	1 910
Bangladesh	1 910	2 060	2 060
Benin	2 050	2 310	2 540
Burkina Faso	1 690	2 090	2 160
Burundi	2 030	1 910	1 640
Cambodia	1 720	1 940	2 060
Cape Verde	2 500	2 960	3050
Central African Republic	2 320	1 920	2 000
Chad	1 650	1 740	2 070
Comoros	1 790	1 870	1 850
Democratic Republic of the Congo	2 070	2 100	1 750
Djibouti	1 810	1 810	2 060
Eritrea	..	..	1 650
Ethiopia	..	..	1 850
Gambia	1 800	2 440	2 520
Guinea	2 270	2 050	2 310
Guinea-Bissau	2 010	2 400	2 420
Haiti	2 040	1 770	1 840
Kiribati	2 600	2 580	2 920
Lao People's Democratic Republic	2 080	2 090	2 120
Lesotho	2 250	2 220	2 230
Liberia	2 520	2 120	2 000
Madagascar	2 420	2 160	2 010
Malawi	2 270	1 960	2 170
Maldives	2 160	2 370	2 470
Mali	1 760	2 270	2 150
Mauritania	2 120	2 540	2 630
Mozambique	1 920	1 780	1 860
Myanmar	2 320	2 630	2 830
Nepal	1 900	2 360	2 190
Niger	2 140	2 050	1 940
Rwanda	2 290	2 000	2 030
Sao Tome and Principe	2 080	2 150	2 170
Sierra Leone	2 110	2 020	2 050
Solomon Islands	2 230	2 110	2 170
Somalia	1 820	1 760	1 550
Sudan	2 270	2 190	2 430
Togo	2 190	2 290	2 460
Tuvalu	..	..	..
Uganda	2 120	2 300	2 140
United Republic of Tanzania	2 280	2 220	2 000
Vanuatu	2 560	2 730	2 730
Yemen	1 950	2 050	2 050
Zambia	2 180	2 060	1 960

* Excluding Bhutan, Equatorial Guinea, Samoa and Tuvalu, for which data were not available. *Source*: FAO.

Table 9. Prevalence of undernourishment in the LDCs, 1996-98

	Total population * (millions)		Population undernourished			
	1969-71	1996-98	1969-71		1996-98	
			Number (millions)	% of total population	Number (millions)	% of total population
All LDCs*	304.9	594.3	115.7	38	235.2	40
AFRICA	165.6	344.9	67.4	41	149.0	43
Angola	5.6	11.7	1.8	33	5.0	43
Benin	2.7	5.6	1.1	41	0.8	14
Burkina Faso	5.4	11.0	3.2	59	3.5	32
Burundi	3.5	6.4	1.2	34	4.3	68
Central African Rep.	1.8	3.4	0.4	22	1.4	41
Chad	3.7	7.1	1.4	38	2.7	38
Dem. Rep. of the Congo	20.3	48.0	6.7	33	29.3	61
Eritrea	..	3.4	..	..	2.2	65
Ethiopia	..	58.2	..	..	28.4	49
Ethiopia PDR	30.6		17.2	56	..	..
Gambia	0.5	1.2	0.1	32	0.2	16
Guinea	3.9	7.3	1.3	34	2.1	29
Lesotho	1.1	2.0	0.5	43	0.6	29
Liberia	1.4	2.4	0.4	30	1.1	46
Madagascar	6.9	14.6	1.1	16	5.8	40
Malawi	4.5	10.1	1.0	23	3.2	32
Mali	5.5	10.4	2.3	41	3.4	32
Mauritania	1.2	2.5	0.6	48	0.3	13
Mozambique	9.4	18.4	5.0	53	10.7	58
Niger	4.2	9.8	1.7	41	4.5	46
Rwanda	3.7	6.0	1.0	28	2.3	39
Sierra Leone	2.7	4.4	0.9	34	1.9	43
Somalia	3.6	8.8	2.0	56	6.6	75
Sudan	13.9	27.7	4.3	31	5.1	18
Togo	2.0	4.3	0.5	24	0.8	18
United Rep. of Tanzania	13.7	31.4	8.1	59	12.7	41
Uganda	9.8	20.0	2.2	23	6.0	30
Zambia	4.2	8.6	1.2	30	3.9	45
ASIA	134.7	241.6	45.8	34	81.3	34
Afghanistan	13.6	20.9	4.7	34	14.6	70
Bangladesh	66.7	122.7	20.2	30	46.8	38
Cambodia	6.9	10.5	2.1	30	3.4	33
Lao People's Dem. Rep.	2.7	5.0	0.9	32	1.5	29
Myanmar	27.1	43.9	9.4	35	3.1	7
Nepal	11.3	22.3	5.0	44	6.2	28
Yemen	6.3	16.3	3.6	57	5.7	35
THE CARIBBEAN	4.5	7.8	2.5	54	4.8	62
Haiti	4.5	7.8	2.5	54	4.8	62

* Excluding Bhutan, Cape Verde, Comoros, Djibouti, Equatorial Guinea, Guinea-Bissau, Kiribati, Maldives, Samoa, Sao Tome and Principe, Solomon Islands, Tuvalu and Vanuatu, for which data were not available.

Note: Totals may not add up due to rounding.

Source: 1969-71: Unpublished FAO data.
1996-98: FAO, Rome (2000), *The State of Food Insecurity in the World*, Table 1.

Table 10. Rural and urban poverty in selected LDCs (percentage of total rural or urban population)

Country	Year or period	Poverty	
		Rural	Urban
West and Central Africa			
Burkina Faso	1998	50.7	15.8
Chad	1985-1986	67.0	63.0
Guinea-Bissau	1991	60.9	24.1
Mauritania	1996	58.9	19.0
Niger	1989-1993	66.0	52.0
Sierra Leone	1989	76.0	53.0
East and Southern Africa			
Ethiopia	1994-1997	45.9	38.7
Lesotho	1993	53.9	27.8
Madagascar	1993-1994	77.0	47.0
Uganda	1997	48.2	16.3
Zambia	1996	74.9	34.0
East and South Asia			
Bangladesh	1995-1996	39.8	14.3
Cambodia	1997	43.1	24.8
Lao People's Democratic Republic	1993	53.0	24.0
Nepal	1995-1996	44.0	23.0

Source: *IFAD Rural Poverty Report 2000*, Rome (2000).

Table 11. Nonfarm income share for selected least developed countries

Country	Year	Strata	Percentage share
Bangladesh	1987	Irrigated	29
		Favourable rainfed	41
		Drought-prone	36
		Flood-prone	45
		Saline-affected	28
	1963		18
	1973		22
	1976		18
	1982		8
	1979-81	Dhaka	59*
		Chittangong	65*
	1983/84		34*
	1984/85		35*
	1990/91		39*
Nepal	1987	Irrigated 1	19
		Irrigated 2	7
		Rainfed 1	17
		Rainfed 2	1
Burkina Faso	1978/79		22
	1981-85	Sahelian (Unfavourable)	34
		Guinean (Favourable)	41
	1981-85	Unfavourable zone	
		Low-income tercile	14
		High-income tercile	44
		Favourable zone	
		Low-income tercile	20
		High-income tercile	50
Ethiopia	1989/90		31
	1989/90	1st income tercile	34
		2nd income tercile	30
		3rd income tercile	30
Gambia	1985/86		23
	1985/86	1st income quartile	20
		2nd income quartile	21
		3rd income quartile	20
		4th income quartile	26

Table 11. Nonfarm income share for selected least developed countries (continued)

Country	Year	Strata	Percentage share
Lesotho	1976		67
	1976	1st income quartile	30
		2nd income quartile	63
		3rd income quartile	94
		4th income quartile	84
Malawi	1990/91		34
Mali	1988/89		59
		Non-cash crop zone	
		1st income quartile	6
		2nd income quartile	6
		3rd income quartile	20
		4th income quartile	16
Niger	1989/90	Unfavourable	44
		Favourable	34
	1989/90	Sudano-Sahelian (Unfavourable)	
		Low-income tercile	27
		Middle-income tercile	41
		High-income tercile	64
		Sudano-Guinean (Favourable)	
		Low-income tercile	31
		Middle-income tercile	32
		High-income tercile	40
Rwanda	1991		24
	1991	1st income quartile	13
		2nd income quartile	16
		3rd income quartile	19
		4th income quartile	31
Sudan	1988		38
United Republic of Tanzania	1980		25

*Percentage share of employment.

Source: FAO, Rome (1998), The *State of Food and Agriculture 1998*, Part III.

Table 12: Food imports in LDCs, 1996-98 (annual average)

Country	Total food imports (million US$)	Cereal imports (million US$)	Share of food imports in total merchandise imports (percent)	Share of cereals in food imports (percent)
All LDCs	**5 179**	**2 710**	**15**	**52**
Afghanistan	124	35	28	28
Angola	275	104	13	38
Bangladesh	598	363	9	61
Benin	98	43	15	43
Bhutan	14	9	10	62
Burkina Faso	97	63	13	66
Burundi	22	13	17	58
Cambodia	59	13	10	22
Cape Verde	49	11	21	23
Central African Republic	24	9	10	38
Chad	37	22	16	59
Comoros	22	11	38	48
Dem. Rep. of the Congo	196	103	45	52
Djibouti	54	24	17	43
Equatorial Guinea	8	2	8	24
Eritrea	69	57	14	82
Ethiopia	113	93	10	82
Gambia	63	31	26	49
Guinea	155	77	16	50
Guinea-Bissau	29	22	46	77
Haiti	224	134	32	60
Kiribati	11	4	27	38
Lao People's Dem. Rep.	37	24	6	66
Lesotho	143	70	13	49
Liberia	67	46	17	69
Madagascar	52	35	11	67
Malawi	43	30	7	69
Maldives	45	13	13	28
Mali	91	29	12	32
Mauritania	171	108	70	63
Mozambique	120	68	15	57
Myanmar	34	12	1	37
Nepal	84	20	6	23
Niger	76	28	18	37
Rwanda	66	48	25	72
Samoa	27	7	27	25
Sao Tome and Principe	5	2	22	50
Sierra Leone	130	94	76	73
Solomon Islands	17	11	10	64
Somalia	88	36	50	41
Sudan	239	146	14	61
Togo	48	26	11	54
Tuvalu	1	0	11	34
Uganda	48	34	6	70
United Rep of Tanzania	137	71	10	52
Vanuatu	15	7	15	48
Yemen	969	442	51	46
Zambia	85	61	10	72

Source: FAO.

Table 13. External assistance to agriculture (EAA) for developing countries and LDCs, 1981-99

Period	Total ODA commitments			Of which external assistance to agriculture (EAA)				
	All developing countries	LDCs	Share of LDCs in total ODA in developing countries	All developing countries	LDCs	EAA as % of ODA in developing countries	Share of LDCs in total EAA of developing countries	Share of EAA in total ODA in LDCs
	mil. US$	mil. US$	%	mil. US$	mil. US$	%	%	%
	(1)	(2)	(3)=(2/1)	(4)	(5)	(6)=(4/1)	(7) = 5/4)	(8) =(5/2)
1981	39 894	10 316	25.9	9 945	2 173	24.9	21.9	21.1
1982	37 277	10 529	28.2	10 775	2 317	28.9	21.5	22.0
1983	35 907	10 317	28.7	10 031	2 214	27.9	22.1	21.5
1984	39 012	10 631	27.3	9 411	1 808	24.1	19.2	17.0
1985	38 128	10 892	28.6	9 988	2 228	26.2	22.3	20.5
1986	44 951	13 121	29.2	12 532	2 329	27.9	18.6	17.8
1987	52 638	15 876	30.2	12 229	2 845	23.2	23.3	17.9
1988	61 224	15 949	26.1	13 343	3 354	21.8	25.1	21.0
1989	56 213	15 548	27.7	12 404	2 826	22.0	22.8	18.2
1990	80 923	16 042	19.8	13 591	3 090	16.8	22.7	19.3
Average 1981-90	**48 617**	**12 922**	**27.2**	**11 425**	**2 518**	**24.4**	**21.9**	**19.6**
1991	77 758	17 570	22.6	12 196	1 881	15.7	15.4	10.7
1992	71 811	17 034	23.7	12 547	2 505	17.4	20.0	14.7
1993	72 180	15 478	21.4	9 535	1 708	13.2	17.9	11.0
1994	74 248	16 430	22.1	11 350	1 520	15.3	13.3	9.3
1995	75 385	15 693	20.8	10 949	1 798	14.5	16.4	11.5
1996	73 709	14 620	19.8	10 951	2 185	14.9	20.0	15.0
1997	63 442	14 044	22.1	11 641	2 205	18.4	18.9	15.7
1998	61 533	14 229	23.1	11 953	2 270	19.4	19.0	16.0
1999*	67 798	14 976	22.1	10 297	2 145	15.1	20.8	14.3
Average 1991-99	**70 874**	**15 564**	**22.0**	**11 269**	**2 014**	**16.0**	**18.0**	**13.1**

Source: FAO data on external assistance to agriculture, based on information available from OECD, World Bank, regional development banks, IFAD, OPEC and CGIAR.

* 1999 data is provisional

Table 14. External Assistance to Agriculture (EAA): Total Commitments by Main Donor Groups from 1995 to 1999 (millions of US$)

	LDCs - Total					All Developing Countries - Total				
	1995	1996	1997	1998	1999*	1995	1996	1997	1998	1999*
Total EAA commitments	**1 798**	**2 185**	**2 205**	**2 270**	**2 145**	**10 949**	**10 951**	**11 641**	**11 953**	**10 297**
- of which grants	**926**	**1 496**	**1 074**	**1 153**	**1 092**	**3 306**	**3 508**	**3 231**	**3 565**	**3 259**
Total Bilateral	**1 001**	**1 511**	**1 088**	**1 140**	**1175**	**4 727**	**5 136**	**4 137**	**4 446**	**3 992**
Total Multilateral	**797**	**674**	**1 118**	**1 130**	**970**	**6 221**	**5 815**	**7 504**	**7 507**	**6 305**
of which:										
- CGIAR Group/FAO/UNDP	*na*	*na*	*na*	*na*	*na*	663	657	730	718	708
- IFAD	120	133	106	150	175	255	391	350	405	393
- Regional Development Banks	205	161	400	300	357	990	1 889	2 247	1 548	2 039
- World Bank Group	370	300	493	535	279	4 158	2 622	3 752	4 330	2 872

Source: FAO data on external assistance to agriculture, based on information available from OECD, World Bank, Regional Development Banks, IFAD, OPEC and CGIAR.

na: data not available

* 1999 data is provisional.

Table 15. Intra-regional and interregional agricultural trade of developing countries, 1980-97 (value in million US dollars)

Exports from: / Exports to:	Year	All developing countries		Latin America		Africa		West Asia		Other Asia	
		Value	% of total exports	Value	% of total exports	Value	% of total exports	Value	% of total exports	Value	% of total exports
World	1980	78 023	100	15 503	100	15 082	100	14 044	100	30 177	100
	1990	102 457	100	17 070	100	15 621	100	19 031	100	47 382	100
	1996	166 940	100	31 688	100	17 560	100	24 462	100	88 705	100
All developing countries	1980	27 348	35	3 964	26	3 274	22	5 248	37	14 197	47
	1990	41 668	41	5 740	34	4 946	32	7 407	39	23 019	49
	1997	83 947	50	13 626	43	6 173	35	13 857	57	48 990	55
of which in:											
Latin America	1980	6 990	9	3 335	22	970	6	1 204	9	1 269	4
	1990	11 128	11	4 859	28	1 552	10	2 202	12	2 243	5
	1997	22 894	14	12 085	38	1 857	11	2 556	10	6 253	7
Africa	1980	2 144	3	108	1	881	6	444	3	542	2
	1990	3 645	4	136	1	1 517	10	840	4	1 104	2
	1997	5 371	3	300	1	1 901	11	1 173	5	1 959	2
West Asia	1980	1 520	2	14	0	138	1	1 144	8	197	1
	1990	2 611	3	40	0	332	2	1 936	10	238	1
	1997	2 912	2	88	0	446	3	4 300	18	1 013	1
Other Asia	1980	16 274	21	486	3	1 165	8	2 372	17	12 066	40
	1990	23 851	23	668	4	1 409	9	2 350	12	19 272	41
	1997	48 527	29	1 109	7	1 935	11	5 805	24	39 498	45

Source: UNCTAD Handbook of International Trade and Development Statistics 1996-1997 (New York and Geneva: United Nations, 1999).

Note: The table relates to trade in all food items and agricultural raw materials (i.e. SITC 0+1+2 (less 27 and 28) +4).

Table 16. Summary of tariff commitments made by LDCs under the Agreement on Agriculture

Country	Average rate of :		Average applied tariff rate [2]
	Bound tariffs [1] (%)	ODCs [1]	
Africa:			
Angola	55 [3]	0.1	..
Benin	60 [3]	19	13
Burkina Faso	100	50	33
Burundi	100	30	..
Cent. Africa Rep.	30	16	..
Chad	80	..	..
Dem. Rep. of the Congo	55 [3]	0.1	..
Djibouti	40 [3]	100	..
Gambia	110[3]	10	..
Guinea	40	23 [3]	16.6[5]
Guinea-Bissau	40	25 [3]	..
Lesotho	200	..	..
Madagascar	30	250	..
Malawi	125	0	..
Mali	60	50	27.6[5]
Mauritania	25 [3]	15	..
Mozambique	100[3]	300	..
Niger	50 [3]	50	..
Rwanda	80	..	..
Sierra Leone	40 [3]	20 [3]	..
Togo	80	7	17
Uganda	80 [3]	..	21
United Republic of Tanzania	120	120	16.2 [6]
Zambia	125[3]	..	24
Asia			
Bangladesh	200[3]	30	7.5-60 (range)
Maldives	30 [3]	1	..
Myanmar	84 [4]	..	..
Solomon Islands	80 [3]		35.6
Latin America and the Caribbean			
Haiti	21 [4]	16 [4]	..

[1] Tariff bindings and other duties and charges (ODCs) are uniform for all items, except where otherwise indicated. (*Source:* Notifications to WTO).

[2] Taken from the latest Trade Policy Reviews of the respective countries and from Kent, Wilcock and Gwynn (1997), *Likely Impact of the GATT Agricultural Agreement on African Agricultural Trade and Development*, ARAP II Research Report No. 1024, USAID.

[3] Rate applied to most agricultural products.

[4] Simple average of all agricultural tariff lines.

[5] As a member of the West African Economic and Monetary Union (WAEMU) is moving towards the Common External Tariff of 10 % or 20 % on agricultural products.

[6] Average for all goods (including manufactured products).